

The Iron Age

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Published every Thursday Morning by DAVID WILLIAMS, No. 83 Reade Street, New York. Entered at the Post Office, New York, as Second-Class Matter.

Vol. XXXVI: No. 19.

New York, Thursday, May 8, 1884.

\$4.50 a Year, Including Postage.
Single Copies, Ten Cents.

The Hungarian Coal Miners.

A correspondent of the Philadelphia Press, writing from Shenandoah, Pa., says:

All through the anthracite coal regions the relations between the various classes of laboring men are growing every day more sensitive. Perhaps it would be more correct to say the differences between different classes of labor. It needs but little study of this subject here to discover that there may be a great deal of difficulty in subduing the growing discord between the workingmen who make up the bulk of the population in mining communities. The country has had a taste of this character of conflict in the revolt of nearly all classes of citizens on the Pacific coast against the Chinese.

Some new emigrants are now coming into the coal regions, to create here the same agitation as the Chinamen did in California. The English, Welsh, Irish and almost all other miners are getting restless at the sight of these laborers, and out of temper at their methods and purposes. They make a fair claim that they come to this country to become citizens, and to add to its wealth and character; that they bring families to raise, to increase the sum of our population. It is their ambition to make a good home, to educate their children, and in many respects to make them good citizens of this new Republic. To do this they must have work at good wages and broader opportunities than this lower order of people demand, against whom they now proclaim.

Employed about the coal mines, ever since I can recall anything about mining, there have been a large number of old men and boys. They worked in the breakers, picking slate and doing other service. But of late years there has been a scarcity of this class of toilers, for very many of the miners, getting ambitious for their sons, began sending them to school, in order to prepare them for higher duties than digging coal. Each year labor for the breakers grew scarcer. Finally the steamship companies doing a large stevedore business took the matter in hand. It is claimed that they sent their agents through the European countries in search of people who were willing to work cheap and live upon very humble fare. They settled upon the Hungarians as meeting these demands. They have been importing these people in large numbers. From 15 to 20 live in a single shanty, one woman doing the cooking and housework of the mess. They spend little or nothing for maintenance, and it is claimed that the average expenditures of the Hungarians who dwell in this region will not exceed \$10 a month, all told. Every dollar besides the actual cost of living is usually sent by draft to the old country at the end of every month. They are very dirty in their habits, clannish in their way of living, and seem to be simply bent upon gain. There seems no difference of opinion among the miners of the different nationalities. Practically, all naturalized laboring men, or those expecting to make this their home, are bitterly hostile to this new class.

They have crowded the old men and boys out of the coal breakers and taken possession of a good deal of the unskilled labor of the region. The majority of tradesmen and other people of the village are quietly almost as much down upon them as the miners, for they do nothing to build up the town. The very fact that many of the people outside of the miners would not object to seeing them driven out is one of the serious aspects of the situation. The demonstrations so far made are not serious if it were not for the temper of those with whom they are surrounded. In this place of 12,000 people, perhaps, there are fully 2000 Hungarians. In Mahanoy City, Ashland and Wilkesbarre the ratio is about the same. The Philadelphia and Reading Coal and Iron Company virtually controls the business interests of this region, and has, it is said, taken this matter in hand in a quiet way. Its detectives are watching the movement, and taking every precaution to protect the company's property in case of an outbreak. There is a rumor here that this corporation had issued an order to its superintendents that no more Hungarians shall be employed upon their works. The peaceable character of the Hungarians may long delay an open rupture, but if they should retaliate when attacked there is no picturing the result. The boys of the village have so far been the principal aggressors, stoning the "Huns," as they are called in this country, on their way home from work and other occasions.

Not more than eight months have elapsed since the first batch of Hungarians made their appearance here. Stolid and dumb as they are, they do not lack courage when pushed to the wall, and since they have understood the situation they have been arming themselves with knives and pistols. The saving fact is that there is plenty of work for everybody. The mines are working on full time, and the town is being rebuilt after the fire which nearly swept it out of existence in November last; but when the mines go on half time, which they will do before the middle of May, and the new buildings in the town are finished, the crisis may come. If then there are more hands than employment can be found for, and the Hungarians can be picked up for wages that nobody else can live on, an organized movement to drive them away by any form of persecution may be looked for. Herded together in squalor and filth, eating nasty food and drinking a vile alcoholic compound

which they prepare for themselves, any community which has a proper regard for sanitation must, for its own protection, force them to quit their crowded quarters, reform their personal habits and cease the use of putrid food. The authorities here are taking such a step, to which they have been compelled by the prevalence of small-pox in the town. A board of health has been established, with plenary powers to cause the evacuation of tenement houses that are overcrowded, and to enforce all other sanitary measures that they may deem necessary.

Mr. Jacob Foster, local editor of the *Miner's Herald*, found, he said, "426 Hungarians living in 37 small houses. Some of them work as low as \$2 per week, and pay \$2.50 per month for board. They buy their own meat and flour, and the meat is usually the vilest refuse of the slaughter-houses. Just

tinctions are continued, the question of emigration to this country must very soon become a momentous one.

Natural Gas Near Steubenville.

It is reported from Steubenville, Ohio, that that section of the Ohio Valley is worked up to a high pitch over the discovery of natural gas. While the efforts in that direction have been unsuccessful in Steubenville, the villages of Lazearville and Midway, adjoining Wellsburg, W. Va., on the line of the Pittsburgh, Wheeling and Kentucky Railroad, six miles from the city, are more fortunate, having within easy reach five flowing gas wells. South of the town are Barclay wells Nos. 1 and 2, struck within two weeks; adjoining these is the Rocky Point well, while on the Ohio side, just op-

In connection with the gas well the company will have their glassworks for the manufacture of table lamps and ware in working order by July 1, and will use nothing but gas as fuel. They are in possession of a new patent furnace, whereby they can use either coal or gas without making the changes or cooling the furnace. Besides supplying their works, the company will supply private families. This will make an immense saving. Hundreds of people are visiting the well. In the office of the company, 300 feet from the well, no other light is needed for reading or writing at night. The well is called the "Will o' the Wisp."

A California Manufacturers' Association.—An organization has been formed at San Francisco called the Manufacturers' Association of California. The office is lo-

bly at its afternoon session. All attempts to amend the bill were overwhelmingly defeated. Thus, Mr. Otis, of Westchester County, pointed out in vain that the indemnity bond was ridiculously small in view of the costly buildings on Broadway that would be imperiled by the building of the Arcade. He moved that the bond be made \$3,000,000 instead of \$600,000. The amendment was rejected by a vote of 31 to 77. The bill was then passed by a vote of 109 to 8. The Assembly also passed by a vote of 97 to 1 Senator Robb's bill for the enlargement of the Grand Central Depot in New York. At the last moment the New York members of the Assembly who had seen great faults in the bill abruptly became its friends.

The Stubblebine Furnace.

The advantages of gas-heated reverberatory furnaces over those heated by solid or raw fuel are so many as to have led to their adoption by many manufacturers, notwithstanding the great expense incurred in their construction. Their costly construction no doubt has stood in the way of their more general adoption by manufacturers. Old and heretofore undesirable forms of puddling and heating furnaces have been retained because their reconstruction would require that large sums of money be charged to profit and loss, and that still larger sums be charged to construction account to cover the expense of building new ones. The problem before iron manufacturers has been to utilize their old plant to as great an extent as possible, and to have the changes necessary in order to secure the economic use, and combustion as slight as practicable and involving the least possible expense.

Mr. William Stubblebine, of Bethlehem, Pa., has invented and put in use a furnace which he claims secures these advantages, retaining the maximum of the old furnaces and requiring a minimum of change. Before describing this furnace, a few words about the principle of combustion in the old reverberatory heating and puddling furnaces. The first product of combustion at the grate-bars of the furnace is carbonic acid. In passing through the upper layers of fuel the carbonic acid becomes dissociated, the oxygen takes up additional carbon and becomes carbonic oxide, one volume of CO₂ becoming two volumes of CO. In this operation a large part of the heat developed in the first stage of the process is lost. Many attempts, with varying success, have been made to burn this carbonic oxide, either in the upper part of the fire-box or while passing through the furnace chamber. In the Stubblebine furnace a portion of the gases from the fire-box is mixed with the upper blast, and the mixture thus formed passes into the heating chamber through openings in the roof of the furnace. The invention consists essentially of the combination in the heating or puddling furnace of a fire-chamber and a gas-chamber communicating with the fire-chamber through openings, some of which are on one side of the gas-chamber and others on the opposite side. Referring to the accompanying cuts, the rear openings A, in Fig. 1, communicating with the fire-chamber, the front openings B, with the working chamber, these communicate with the mixing chamber, which is built over the fire-chamber. The upper air blast C is introduced into the roof of the furnace between the gas-chamber and the fire-chamber. This is forced over the roof of the furnace for two purposes—first, to keep the bricks cool and make the roof last longer; second, to heat the air. As the heated air passes out it enters the 6-inch pipe D, which reaches from one side of the furnace to the other, and is placed directly above the ports A, the heat from the fire-chamber giving additional heat to the air in pipe D before it passes to the ports B B, where the air and gases are thoroughly mixed. On the pipe D there is a valve to regulate the amount of air required in the furnace to give complete combustion. There is also a blast-pipe that supplies air under the grate of the furnaces. This also has a regulating valve to give the proper amount of air to the fire for combustion of the fuel, and which the workman regulates according to the requirements of his furnace. The furnace, it is said, cleans instantly, the heat becomes intense, and the whole action is under perfect control. The accompanying illustrations will convey to the reader a clear idea of the form, arrangement and position of the gas-mixing chamber, Fig. 3 showing a vertical and Fig. 4 a horizontal section. (See page 7.)

The good results attending the use of this invention are due, it is believed, first, to the mode of introducing the blast into the chamber, so that there is a freer passage of the gases into the same, and a more determined return of the gases combined with air to the working chamber, and, second, to the thorough admixture of air and gases in the chamber before they escape into the working chamber. In working the furnace, the air of this upper blast is forced into the fire-box quite gently and in sufficient quantities to secure perfect combustion. By this the contact of oxygen with the metal and consequent waste which would ensue with a vigorous blast is prevented. The same is true of the lower blast, which is both gentle and so regulated as to secure the greatest production of carbonic oxide and prevent

(Continued on page 7.)

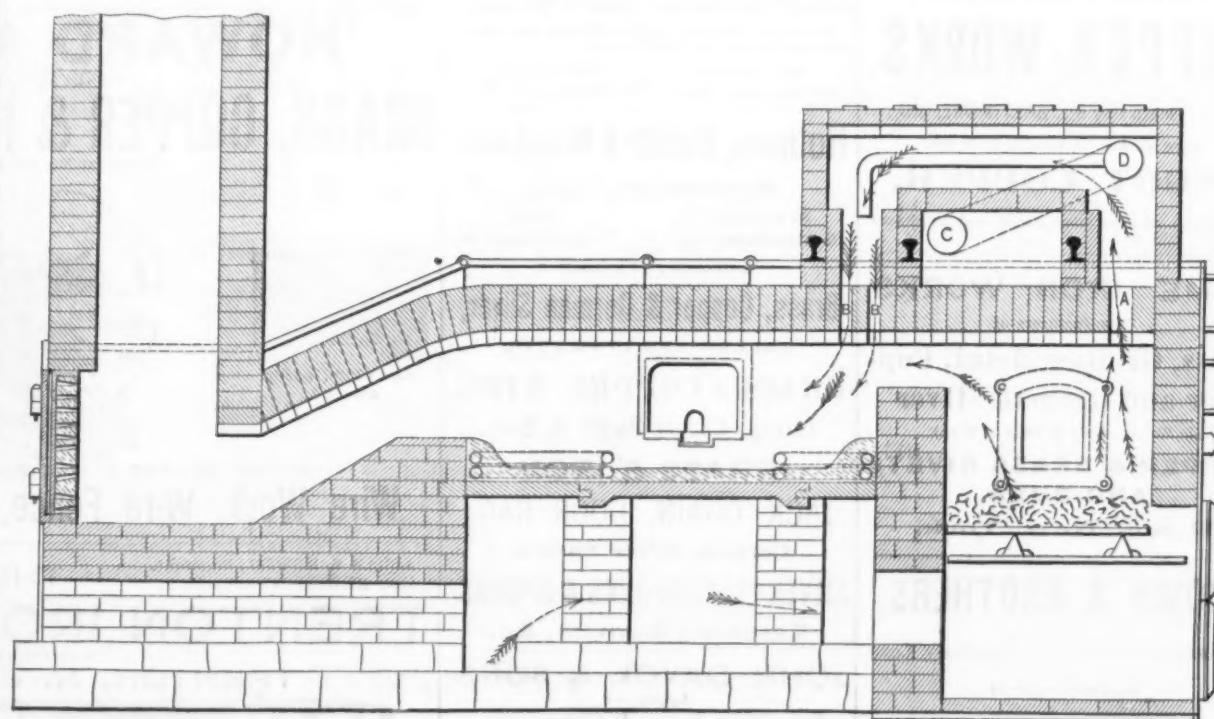


Fig. 1.—Longitudinal Section.

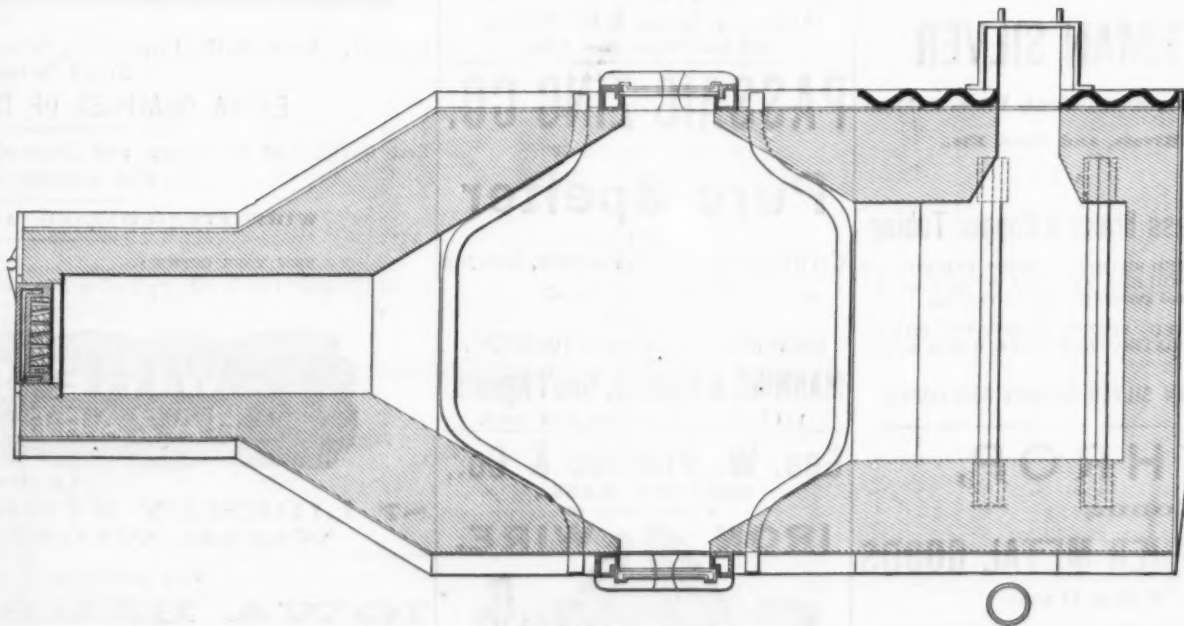


Fig. 2.—Sectional Plan.

THE STUBBLEBINE FURNACE.

now they are mainly coming into contact with the boys who have been employed as slate-pickers in the mines. The boys go to school in the winter and work in the mines in summer and spring. They are getting out of school now, and while they used to make from \$15 to \$20 a month in the breakers, the Hungarians are doing the same work at \$2 or \$3 a week."

Col. Thomas H. Rickert, who is building a dam at Lost Creek to supply the Girard estate collieries with water, talked of the matter as an employer who has about 130 of the Hungarians in his pay. "They are," was his opinion, "reliable, but rather stupid workmen, and probably one-fourth of them are good mechanics—blacksmiths, masons, carpenters and the like. I have had as many as 500 in my employ at one time, and was paying them last year from \$1 to \$1.25 daily. I have generally found that as soon as they know what the market price of labor is they want the full figures. My men have just struck on me for \$1.50 per day, and I am weeding out all but the most useful of them."

The problem presented for settlement is an exceedingly difficult one. The precedent established by Congress to satisfy the clamor of the Pacific Coast is cited constantly to maintain the cause of those who insist that these cheap laborers must go. If these dis-

posited, is the Spaulding Iron Works' well. Over 200 families in Wellsburg are private consumers from the Barclay wells, while all the factories use the gas as fuel. But the best and greatest well is that of Dalsell Brothers, glass manufacturers, and formerly of the Southside, Pittsburgh.

Five months ago, with every discouragement possible, the Dalsells began to bore in a flat, marshy piece of ground about two miles due north of the Barclay wells. On the 24th ult., at a depth of 1285 feet, a strong vein was struck, and lighted for the first time the next evening. The gas is of a pure quality, entirely free from salt water and perfectly dry. The flame, when lit, extends 40 feet, and the light is plainly seen in this city, six miles away. The well has 907 feet of casing. The earth about the mouth of the pipe is literally baked, while the roar can be heard four miles off, and windows one-fourth of a mile away continually rattle. The company believe the pressure fully up to the McGuigan well in Pennsylvania, which is 300 pounds to the square inch. A 16-foot plank was placed over the hole of the well, and with as many men as could stand on it it was lifted into the air. As soon as possible the Dalsells will run a 25-foot pipe from the top of the derrick, 75 feet high. This will throw the light for miles around.

Room 43, Merchants' Exchange, 431 California street. A. S. Hallidie is president, Irving M. Scott, vice-president; N. W. Spaulding, treasurer; George C. Hickox, secretary. The purposes of the organization are "to promote manufacturing interests of this coast by establishing more intimate and reciprocal relations between the various mechanical and other industries. Its membership already embraces upward of 100 names, representing nearly every prominent manufacturing and laboring pursuit, engaging large capital and many thousand employees. It is desired to extend this membership to include every industrial and manufacturing interest, however small or remote, in the State, believing such combination will create new and advance existing enterprises, the special object being to stimulate and assist local production and manufacturing by mutual encouragement, patronage and protection, thereby increasing the sources and means of employment for many thousands more of our people who wish and only want opportunities to make their time and labor useful.

On the 1st inst., at Albany, the Broadway Arcade Railroad bill, which authorizes the construction of an underground railway on that thoroughfare, was passed by the Assem-

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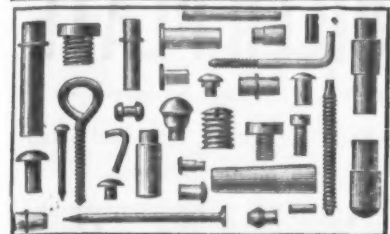
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A Question of Patent Law.
A correspondent sends us the following
inquiry, covering an important point in
patent law, which is made clear by a hypo-
thetical illustration. The point, however, is
one of general interest to manufacturers:

"Does a patent for a process or machine
for manufacturing in a new way an article
already in use, and not itself a patentable
article, give the patentee a legal claim for
royalty upon the product of an infringing
process or machine? Has the owner of the
infringing patent a legal claim for royalty
upon those through or into whose hands the
product has passed as dealers or consumers?"

Hypothetical Illustration.—Cigarettes are
made usually by rolling with the fingers,
pasting by passing a brush along the edge of
the paper, and cutting off the superfluous
tobacco at the ends with scissors. A man
patents a machine which rolls the cigarette,
pastes the paper by a mechanical device and
cuts off the ends by means of knives. The
product of these two processes are as nearly
as possible identical in size, weight and
appearance. If the machine is infringed,
does the product of the infringing machine
owe the inventor royalty? or must he collect
it, if at all, from the machine itself?

We referred the above to an expert in pa-
tent law, and print his reply below:
The product does not owe anything. That
is well settled everywhere. It is interesting
to trace the border line of liability for an
infringement. In case of a patent on a ma-
chine the manufacturer, seller or user of the
patented machine is liable. In France one
is liable for merely having in his possession a
patented machine, but in England and
America that is not the law. A process is
less tangible. A patent for a process is un-
derstood to be infringed only by the using of
the process. Courts are liberal rather than
technical. They have held that a lamp
which required a chimney as a part of a
combination was infringed by the making
and selling of burners alone having the pe-
culiarities set forth in the patent, and being
burners which could not be used without
chimneys. It being the custom in the trade
to purchase chimneys separately and apply
them, it was decided that those burners con-
structively contained the combination of the
same with the chimney. By analogous rea-
soning the possession of apparatus or mate-
rials adapted for use in a patented process,
and of no use for any other purpose, may
be held to establish an infringement of
a process; but no such case has been re-
ported.

The liability incurred by the infringer
does not go with his property after it has
passed out of his possession. The product
of the patented process or machine is free
to be bought, sold or used by any one, with-
out regard to any infringement which oc-
curred in its manufacture. This was estab-
lished in the Woodworth planer cases, where
the use of the patented machine was licensed
in rigorously established districts. It was
sought to prevent the transportation of the
planed lumber from one district into another.
But that could not be sustained.

In all the complex questions arising in
suits for infringements it has never been
successfully urged that the product of a
patented machine or process was liable. The
question was raised in *Boyd vs. McAlpine* (3
McLane, 427). It was decided squarely in
favor of the freedom of the product. The
court said: "It is insisted that the sale of
the thing manufactured by the patented
machine is a violation of the patent. But this
position is wholly unsustainable. The patent
gives the exclusive right and liberty of mak-
ing, constructing, using and vending to
others to be used, the said improvement. A
sale of the product of the machine is no viola-
tion of exclusive right to use, construct or
sell the machine itself. If, therefore, the
defendant has done nothing more than to
purchase the bedsteads from Brown, who
may manufacture them by an unjustifiable
use of the patented machine, still the person
who may make the purchase from him has
the right to sell. The product cannot be
reached except in the hands of one who is in
some manner connected with the use of the
patented machine." This has never been
overturned. The question has been but rarely
raised. It is considered perfectly well estab-
lished.

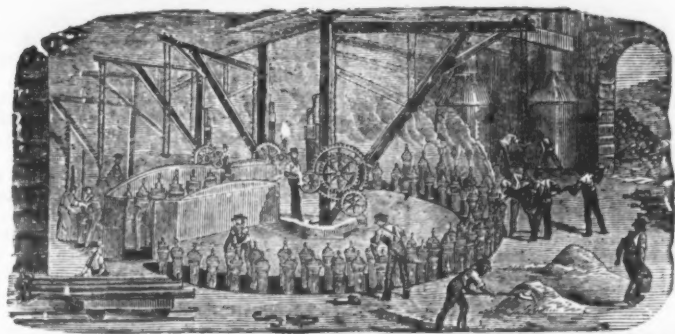
In *Merrill vs. Yeomans*, 4 Otto, 568, the
United States Supreme Court canvassed the
question of the liability of the product where
a claim was dubious in its terms. It read: "I
claim the above-described new manufact-
ure of the deodorized heavy hydrocarbon
oils, suitable for lubricating and other pur-
poses, free from the characteristic odors of
hydrocarbon oils, and having a slight smell
like fatty oil, from hydrocarbon oils by
treating substantially as is hereinbefore de-
scribed."

The court, after canvassing the question
whether the claim was for the product,
said: "If, however, appellant's patent is
only for the mode of treating these oils in-
vented and described by him—in other
words, his new process of making this new
article of hydrocarbon oil—then it is clear
the defendants have never infringed that
patent, because they never used that process
or any other, for they manufactured none
of the oils which they bought and sold."

It is very common among railroad cor-
porations to have leases executed for such a
long term of years that perpetuity is practi-
cally secured. So accustomed have railroad
managers thus become to the fixing of very
long periods for their operations that it is not
surprising to notice a tendency toward the
greater extension of the limits in which their
bonded indebtedness will become due. The
longest period of this kind which has yet
come under our notice is the one proposed
last week at a meeting of the stockholders
of the Pittsburgh, Fort Wayne and Chicago
Railway Company. It is proposed to issue
bonds to be due at the option of the company
after the year 2868, or only a little matter of
984 year hence. The time is coming—if,
indeed, it has not already come—when bonds
of this kind, representing undoubted value,
will be in very good demand by investors in
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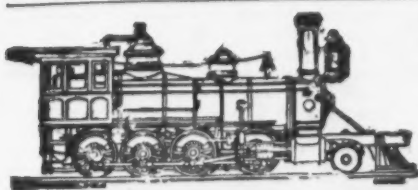
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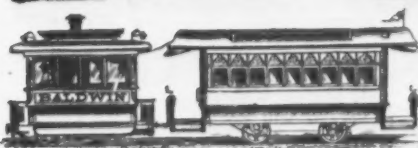
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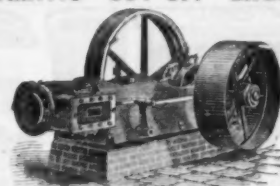
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Swedes Iron Upholsterers' Gimp, Lace and Card Tacks. Black and Tinned Trunk and Clout Nails. Finishing Nails and Brads; Shoe Nails of Swedes and Common Iron; Copper, Brass & Steel Lining & Saddle Nails; Tufting Nails & Tufting Buttons; Brass and Iron Wire Nails, Molding Nails, Escutcheon Pins, Black and Galvanized Regular and Chisel Pointed Boat Nails.

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AMERICAN TACK CO., Fairhaven, Mass.**Nicholson FILES.**

Bandsaw Files,
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Cotter Taper,
Cotter Equaling,
Cross or Crossing,
Doctor,
Drill,
Feather Edge,
Finishing,
Flat,
Flat Equaling,
Flat Wood,
Gang-Edger,
Ginsaw,
Gulletting,
Half-Round,
Half-Round Wood,
Hand,
Hand Equaling,
Handsaw Blunt,
Handsaw (Double-End),
Handsaw Taper, single-cut,
Handsaw Taper, double-cut,
Handsaw Taper, slim,
High Back,
Hook-Tooth,
Knife,
Knife Blunt,
Lead Float,
Lightning,
Machine Mill,
Mill,
Mill Blunt,
Mill Pointing,
Pillar,
Pitsaw,
Reaper,
Roller,
Round,
Round Blunt,
Slotting,
Slim Handsaw Taper,
Square,
Square Blunt,
Square Equaling Files,
Stave Saw,
Three-Square Files,
Three-Square Blunt Files,
Tumbler Files,
Union Out,
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Warding Blunt File,
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Baker's,
Beveled Edge,
Bread,
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Jig,
Oval or French Shoe,
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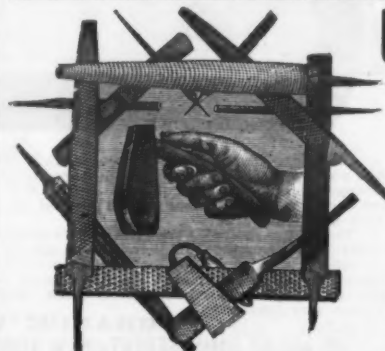
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Blasting Powder and Electrical Blasting Apparatus.**Military Powder** on hand and made to order.**SAFETY FUSE, FRICTIONAL & PLATINUM FUSES.**

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BAG
FILLERS,
HAND
SCOOPS
&c.**

Send for Illustrated
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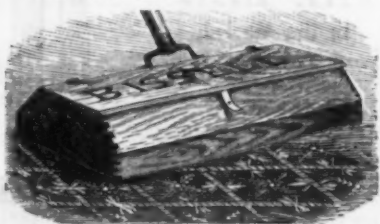
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IS THE MOST PERFECT NOVELTY OUT.
Simple, Inexpensive, Accurate.



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Write for circular and mention this paper.

**THE OLD RELIABLE
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The Latest Improvement—No. 7, with Drop Pan.
Its mechanical simplicity makes it the favorite
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BISSELL CARPET SWEEPER CO.,
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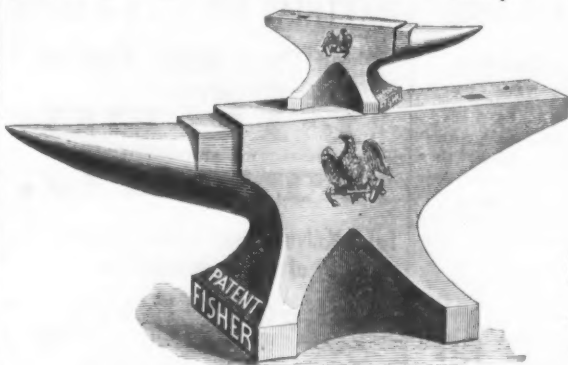
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MAYNARD'S C. S. Planters'
Hilling, Bog and Handled
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BRADY'S Crows, Planters'
and Hilling.
ELWELL'S Weeding, Plant-
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Leading Numbers: 14, 048, 130, 333, 161.
For Sale by all Stationers.
THE ESTERBROOK STEEL PEN CO.
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ESTABLISHED 1843.
MORE THAN 200 DIFFERENT PATTERNS.

None Genuine without our Trade-Mark,
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WARRANTED BETTER THAN THE BEST ENGLISH ANVIL

Face in one piece of BEST TOOL CAST STEEL, PERFECTLY WELDED, perfectly
true, of hardest temper, and never to come off or "settle." Horn of tough untempered
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IS FULLY WARRANTED STRONGER THAN ANY OTHER LEG VISE, AND
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Maker and Patentee of the Improved

**Hydraulic Jacks
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Punches.**



Roller Tube Expanders and Direct Acting Steam Hammers.

Communications by letter will receive prompt attention.

Jacks for pressing on Car Wheels or Crank Pins made to order.

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MANUFACTURERS OF
PURE ELECTRIC WIRE,
For Magnets, Telegraphs, Telephones, &c.

Insulated on the bare wire with H. Spiltdorf's patented Liquid Insulation, covered with cotton or silk.
All sizes of Bare and Covered Wire in Stock.

The conductivity of every bundle tested and warranted.

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THE ESSEX HORSE NAIL CO., Limited.

OFFICES: **ESSEX, ESSEX CO., NEW YORK.**
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THE ESSEX HORSE NAILS

Are drawn from the Best Norway Iron Rods only. They are hot forged and cold-
pointed, rendering them both tough and stiff, and are warranted

FIRST-CLASS IN EVERY RESPECT.

By the use of improved machines we forge Fifty per cent. More Nails on a machine
than any other company, and are thus enabled to sell them proportionately less than any
other nail of equal quality. All nails branded ESSEX fully guaranteed.

Stanley Rule & Level Co.,

MANUFACTURERS OF

**Improved
Carpenters'
Tools.**



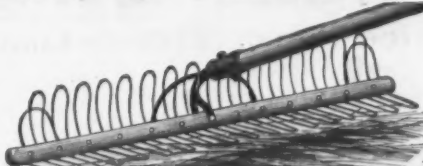
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THE DAVIS LAWN RAKE.

A
PERFECT
RAKE



FOR
CLEANING
LAWNS.

PATENTED DECEMBER 17, 1878.

The teeth are so formed as to make it an impossibility to tear the grass or injure the lawns in any man-
ner. As a stable or general-purpose rake it is unequalled. No implement made so completely fills the
immense demand for a lawn cleaner. For sale by Jobbing, Hardware, Implement and Seed Houses
throughout the United States, England and Germany.

W. A. HALTEMAN & CO., Mfrs., Dayton, Ohio, U. S. A.

MANUFACTURERS OF

**GENUINE BRONZE, BRASS, AMERICAN BRONZED AND JAPANNED
HARDWARE,**

Rim and Mortise Locks, Knobs and Escutcheons,
Apple Parers, Registers, Bronze and Cast Butts,

STATIONERS' HARDWARE, &c.,

READING HARDWARE CO., Reading, Pa.

The Jewel Flue-Hole Cutter.

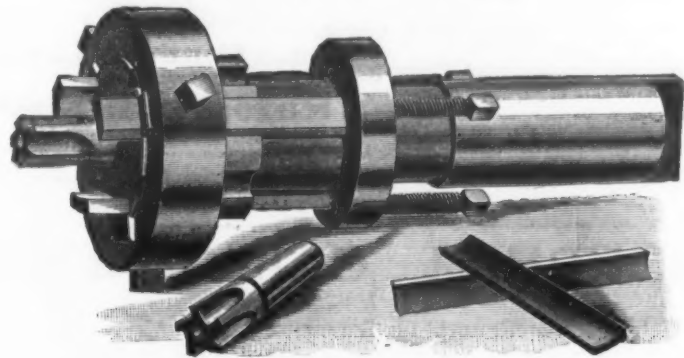
The Myers Manufacturing Company, of
Chicago, are introducing a new flue-hole
cutter that possesses several very meritorious
features, and which they have named the
"Jewel." The accompanying engraving
shows the parts of which it is composed, and
their general combination and arrangement.
The device has been produced with the view
of meeting all the requirements of the boiler-
maker and the machinist in the way of a
tool carrying blades capable of being re-
newed, so constructed as to be kept easily
sharpened by grinding, for cutting accurate
and smooth holes in boiler heads, safe plates
and similar iron and steel surfaces. As may
be seen by the engraving, the body carries
three cutters or blades. These are properly
curved and cleared. The body is made of
the best machinery steel, and is case-hard-
ened. The shank is left straight, and has
sufficient stock to permit of its being fitted
to the socket of any press required for its
size. The lead pins for all of the sizes
are made $\frac{1}{8}$ inch in diameter, unless for
special conditions. The cutters, lead pins,
gibs and screws are of the best English
steel. All the parts are made to gauge, and
are interchangeable, thus facilitating repairs

having been measured, and a stone thrown
down never seems to reach the bottom. The
rock is basaltic, and when struck by a ham-
mer resounds like metal. There was, per-
haps, but one eruption through this shaft,
and that must have been in the triassic age,
but how many thousands years ago is un-
determinable.

Early History of the Steam Engine.*

(Continued.)

We have now reached a point when light
begins to break in, feebly enough at first,
upon the darkness of ages. Faint though it
be, it is a sure indication of a dawning day.
We note here and there indications of a true
spirit and method of research, dimly fore-
shadowing those modern methods of obser-
vation and induction which have done and
are still doing so much for mankind. Thus,
we find in the writings of Giovanni Baptista
Porta, 1601, methods for determining the
relative volume of steam, or its volume com-
pared to that of the water from which it is
generated. Porta also describes in his work,
"I Tre Libri Spirituali," published at Naples
in 1606, an apparatus for raising water by
means of steam. He uses a separate boiler



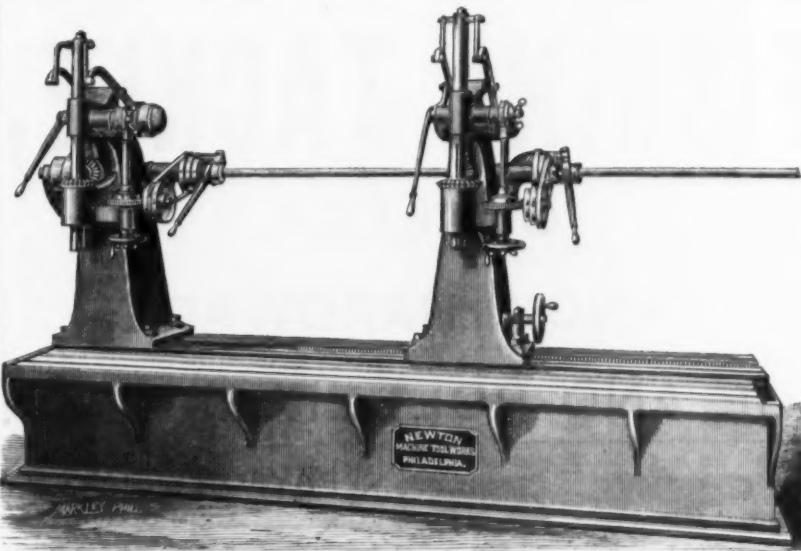
THE "JEWEL" FLUE-HOLE CUTTER.

should any ever become necessary. Four
regular sizes of the tool are made—2, 2½, 3
and 3½ inch. Two special liners are
furnished with every tool for use under one of
the cutters, in cases where flues or tubes run
lumpy or irregular in size. As indicating
the relative capacity of this tool, we are
informed that in a prominent Western shop
95 2-inch holes were cut with this device in
five hours, while with ordinary facilities in
the same shop ten hours were consumed in
cutting 86 holes.

makes use of the expansive force of steam
to force water up a pipe, and he even speaks
of the production of a vacuum by the con-
densation of steam. Here, then, are some
of the essential principles of the steam en-
gine of to-day; yet I do not think it can be
considered as in any true sense a step toward
the steam engine, because there was no
progress recognized in it, or necessarily in-
volved in it. Its principles were not recog-
nized as principles at all, and the apparatus
was simply a combination of, at that time,
known facts concerning steam, for a special
purpose—just as was the case with the aeol-
ipile—and no more than in this latter case
were its principles of action known. Suggest-
ive, therefore, as this application might have
been, the time has not yet arrived when its
suggestions fall upon minds prepared to re-
ceive them and follow them up. Its prin-
ciples are not yet understood, even by its
inventor. Why water is forced up to fill a
vacuum, and what it is which forces it up—
these are as yet mysteries which are dog-
matically explained by the sage proposition
that "nature abhors a vacuum," and there-
fore it must run up. A roundabout way of
explanation, this, which evidently "swings
round the circle" back to the point of de-
parture, and which even in the present day
is perhaps too often made use of, by peda-
gogue and sage alike, to conceal real igno-

Duplex Rod-Boring Machine.

We present in the accompanying cut a
duplex rod-boring machine now being turned
out by the Newton Machine Tool Works,
2341 Callowhill street, Philadelphia, Pa.
The machine is specially designed for boring
locomotive side-rods, made with bushed
bearings, but may also be used where
strapped brasses are required, boring both
holes exactly parallel at one operation. One
head, that shown at the left of the en-
graving, is stationary, while the other can
be adjusted to suit the length of rod by a
tangent screw, and exact centers can thus
be obtained. The spindles are 3½ inches in
diameter, are strongly back-geared, and are
furnished with automatic feed and quick re-



DUPLUX ROD-BORING MACHINE.

turn. Two holes, 4 inches deep and 8½
inches in diameter, have been bored on this
machine in 40 minutes. The workmanship
throughout is of the most thorough character,
and reflects credit upon the builders of the
tool.

Volcanic Action in Pennsylvania.—
Prof. Henry Cawill Lewis recently gave an
interesting lecture at Haverford College, on
the volcanic formations of Chester County,
Pa. He said that there had been three
epochs of volcanic action in Pennsylvania
similar to that which is now going on in
Java. The roots of the old volcanoes are
easily found in Chester County. The oldest
formation is at Buck Ridge, on the Pennsylv-
ania Railroad, between Rosemont and Rad-
nor and Spring Mill and West Chester, and
in this section occur the igneous rocks, the
very oldest in the country. In Rose's quarry
is the base of an old volcano, the upper por-
tion having been worn away by erosion or
the influence of the atmosphere. Three miles
have thus been worn off through Chester
County. Near Springfield, in the northern
part of Chester County, there is a patch of
an acre and a half of woods, in the center of
which there is a large surface of rocks piled
up in a very irregular manner. In the mid-
dle of the pile there is an opening, which is
the shaft of an old volcano. It is oval and is
700 feet wide in its greatest diameter. Its
depth has never been ascertained, it never

rance and satisfy the inquiring mind. It is
so much easier to rest content with a learned
phrase than it is to frankly acknowledge our
ignorance and earnestly interrogate nature,
to fish in the depths of our own inner con-
sciousness, very often indeed but a shallow
pool, and certainly not the place in which to
seek the significance of natural phenomena.

The creation of a vacuum by the con-
densation of steam, announced by Porta, would
have been a grand step in advance if prop-
erly apprehended. But not being thus appre-
hended it remains unfruitful, like all the
other discoveries and applications thus far
noticed. No one builds upon it, it leads to
no results, suggests no progress. Thus we
find Salomon de Caus in 1615, only nine
years later, publishing a work at Frankfurt,
in which he illustrates the proposition, to
use his own words, that "water will, by the
aid of fire, mount higher than its level," and
describes a machine for thus raising water,
like all his predecessors apparently without
perceiving the slightest resemblance in
principle between it and anything hereto-
fore made known. It is hard to find such an
application, even looking at it from our
present standpoint of knowledge, anything
essentially different from the aeolipile, or
from Hero's priest and altar, already de-
scribed. Indeed, from our standpoint, Porta's

*From Prof. A. Jay Dubois' recent lecture
delivered before the Engineers' Association of
New Haven.

INFRINGEMENT OF JOHN WILSON'S TRADE MARK, MASSACHUSETTS, U.S.A.

JOHN WILSON'S
BUTCHERS' KNIVES,
BUTCHERS' STEELS,
and
SHOE KNIVES.

TRADE MARK

REGISTERED IN ENGLAND,
WASHINGTON, U.S.A.,
AUSTRALIAN & OTHER
BRITISH COLONIES, &
GERMANY.

ACKNOWLEDGMENT AND AGREEMENT.

WHEREAS, I, GEORGE A. ROBINSON, of West Mansfield, County of Bristol, State of Massachusetts, have heretofore manufactured and sold certain Knives bearing a Mark which is claimed to be an imitation of the trade-mark owned by John Wilson, of Sheffield, England, which consists of four peppercorns and a diamond, under the mistaken belief that I had the right to do so.

NOW, This is to Witness, that, in consideration of the forbearance of the Representatives of the said John Wilson to sue me for damages for the wrong aforesaid, I do hereby undertake and agree,

FIRST, to surrender and deliver to the Attorneys for the said John Wilson, all knives now on hand, and in my possession, or under my control, bearing the said imitation trade-mark, and

SECOND, I further undertake and agree to and with the said John Wilson, and his legal representatives, not to manufacture or sell, or cause to be manufactured or sold, at any time in the future, Knives or other Cutlery, bearing his trade-mark aforesaid, or any imitation or simulation thereof. IN WITNESS WHEREOF, I have hereunto set my hand and seal at West Mansfield, aforesaid, this thirty-first day of May, 1883.

WITNESS—
E. M. REED,
(Attorney for Defendant.)

Imitation

G. A. ROBINSON. (L.S.)
J. WILSON
SHEARSTEEL Mark.

WORKS:—SYCAMORE ST., SHEFFIELD, ENGLAND. Established 1750.

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FACTORY AT WORCESTER, MASS.

We make the largest and most complete line of Razor Strops ever offered to the trade, including every description and style known. Our Razors are the Standard for excellent cutting quality and elegance of finish, and our prices lower than foreign makes of similar grade. Our Toilet Sets and Dressing Cases are designed for practical use and are made in various attractive styles.

Send for Illustrated Price List—free to the Trade.

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W. & S. Butcher's Edge Tools.
A. Field & Son's Tacks, Brads, Nails, &c.
Nicholson File Co.'s Files.
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FISHING TACKLE,
CUTLERY,
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ICE AND ROLLER SKATES.PAYSON'S PATENT
Anti-Friction

CASTERS.

Seventy
Styles.PAYSON
MANUFACT'G CO.,
1319 to 1325 Jackson St.,
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GIANT BELT FASTENER.



PATENTED DECEMBER 26, 1882.

L. A. SAYRE, Newark, N. J.

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(LIMITED)

CELEBRATED CUTLERY,
No. 82 Chambers Street, New York.
F. & W. CLATWORTHY, Agents,
The demand for Joseph Rodgers & Sons'
productions having considerably increased, they
have, in order to meet it, greatly extended their
Manufacturing Premises and Steam-power.
To distinguish Articles of Joseph Rodgers
& Sons' Manufacture, please to see that they bear
their Corporate Mark.

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MANUFACTURERS OF

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Manufacturers of
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Single Shear
Horse Hay Forks
And
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HAY ELEVATORS,
PULLEYS and
GRAPPLES.
Send for Circulars.
Muncy, Lycoming Co., Pa.

The Wm. P. Scott American Field Guns
LEAD THEM ALL.

Send for Price Lists, &c., to

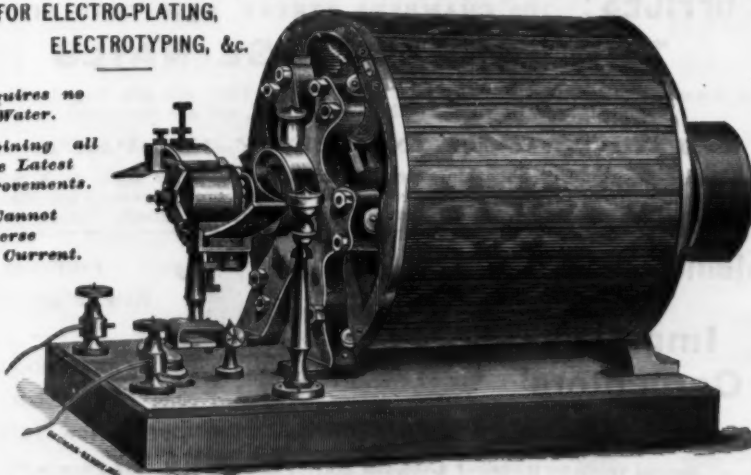
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THE AMERICAN DYNAMO-ELECTRIC MACHINE,
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Cannot
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The Celebrated Pieper Breech-Loading Guns.



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WHOLESALE ONLY. SEND FOR CATALOGUE.

ROLLING MILL TOOLS.

Roll-Turning Tools, Roll-Turning Plugs.

ALSO

Shear Knives, Circular and Straight, made from SPECIAL STEEL.

S. Tretheway, 49th Street Tool Works, Pittsburgh.

THREE PRIZE MEDALS.



PARIS, 1855.

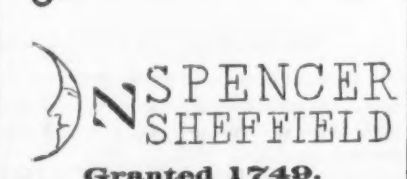


PARIS, 1878.

MATTHIAS SPENCER & SONS,

Albion Steel Works, Sheffield,
MANUFACTURERS OFFILES
AND
STEEL,Table Knives, Razors, Shovels, &c., &c.,
of every description.

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Granted 1749.

W. & S. BUTCHER,
SHEFFIELD, ENGLAND,
Manufacturers of

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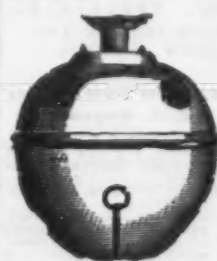
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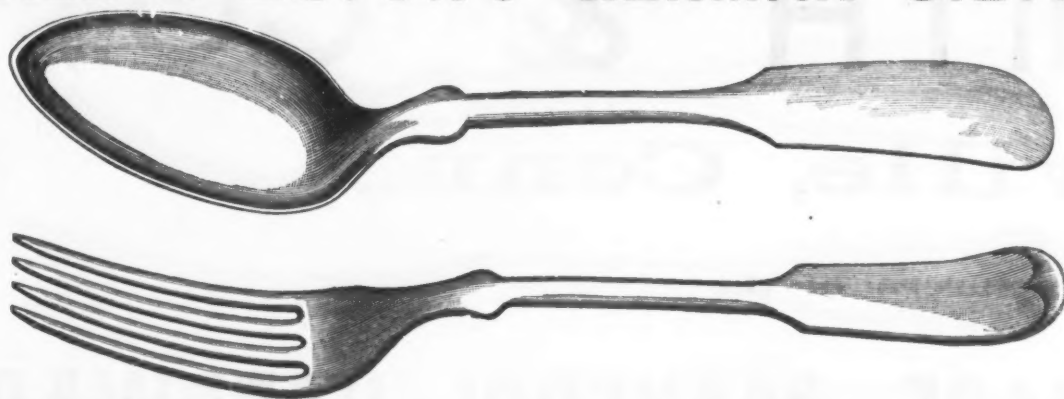
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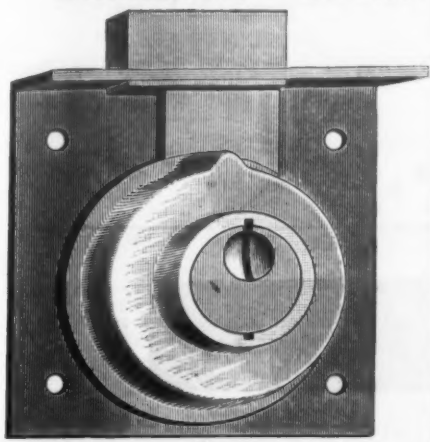


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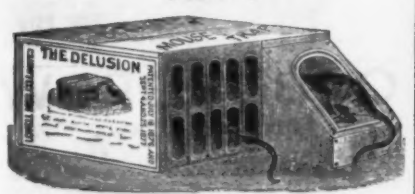
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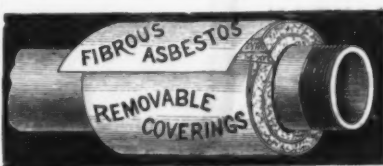
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apparatus is in all respects better worthy of study, richer in suggestion, and, in comparison, even a better indication of progress, of a real step in advance. It will, therefore, perhaps, surprise you to learn that De Caus has been accorded the great credit of being the inventor of the steam engine; accorded not only by learned men and competent authorities, but also conceded by the common consent of the public, and commemorated by poet, sculptor and painter.

The reason of this singular state of things is soon told. In the year 1834 a newspaper published a letter dated February 17, 1641, which purported to be written by Marion Delorme to the Marquis de Cinq-Mars, from which it appeared that De Caus was imprisoned by Richelieu in the madhouse of Bicetre on account of the folly of his ideas concerning the steam engine. The sympathy of the world was immediately enlisted on behalf of the "martyr," the "tyrant" met with universal execration, and the ingratitude of the "great inventor's" own generation was sincerely deplored. It is to be regretted that the first tombstone which we thus encounter on our journey should bear a sham epitaph and tell a false tale. It is no pleasant task to criticise an epitaph, or to rob the honored dead of even unmerited honors. But those remorseless investigators, the tendency of whose labors really seems sometimes to cast a doubt upon our most cherished beliefs, and to render us sceptical even of the existence of such well-established national characters as John Smith and Pocahontas, whose researches respect no one's prejudices, and often incline us to believe, in our despair, that the so-called "history" is three-quarters pure fiction, and that the average human being can't tell the truth—even when he tries to—these plunderers of dead men's honors and live men's faith have only too well established the fact that the letter referred to was a newspaper canard, pure and simple; that, so far from dying in madhouse at Bicetre in 1641, this was not a madhouse at all, but a military hospital; that the sympathy of a world has been wasted, and that our martyr turns out to be a very ordinary sort of man, after all, who lived an uneventful life, wrote an uneventful book and died an uneventful death. Upon such a basis rest the honors which a capricious fortune has showered upon the grave of De Caus. Our only satisfaction is to think, at least, that if he cannot lay claim to the inventor's crown of laurel, he has not been forced to wear the martyr's crown of thorns.

Finally, the invention of the steam engine is claimed for Edward Somerset, second Marquis of Worcester. In 1663 he published a very curious work with a very curious title, "A Century of the Names and Scantlings of Inventions by Me Already Practised." In this work, which is written in the most obscure style, we find a description of what would seem to be an apparatus for raising water by the expansive force of steam. The description is unaccompanied by any drawing, and it is more than doubtful whether any one besides the Marquis has ever understood it. As near as can be ascertained, a boiler was used to generate steam, which was then admitted to a vessel partially filled with water. The steam forced this water out through a pipe. The vessel was then shut off from the boiler and the steam in it condensed. The presence of the outside air thus forced up more water to fill the vacuum produced by the condensation. Steam was then again admitted, and so on. It is hard to find in all this anything new—which had not been already made known by Porta or De Caus—upon which to base any just claim of the Marquis of Worcester to be regarded in any sense as the inventor of the steam engine. Indeed, as we have said, such an honor can be claimed by no single man, and all such attempts must, therefore, prove futile. The Marquis did, however, contribute notably to advance. While the contrivances of Porta and De Caus were hardly more than models or toys, it is established beyond doubt that the Marquis of Worcester was the first to construct an engine to do useful work. His apparatus was used for raising water at Vauxhall, London, and at Raglan Castle, his home. The openings in the wall are still to be seen which were made for its reception.

(To be continued.)

New Inventions

A winding apparatus for mines has been patented by A. Lindenberg, of Dortmund, Germany. His improvement has for its object to prevent the weight of the counter-balance rope or chain from acting upon the winding rope. To this effect each end of the counter-balance rope is connected to a separate thin suspension rope that first passes over a guide-pulley and is thence connected to the opposite cage. In this way a portion of the weight of each cage is balanced by the opposite counter-balance rope, and as the cage is lowered the length and weight of such rope will be proportionately increased.

A hinge for trunks has been invented by A. W. Sangster, of Buffalo, N. Y. The two hinge-pieces are swiveled to a jointed plate which folds flat over the hinge when the latter is closed. When opened the jointed plate stands out diagonally to the hinge-pieces, and serves as a brace to hold the cover open. The jointed plate should be of proper size to allow the cover to incline back at the proper angle.

An improvement in dies for forging hammers is patented by H. Hammond, of Hartford, Conn. The object of the invention is to finish the hammer without leaving upon it a web where the parts of the die join. The peculiar features of the upper and lower dies are that the division line upon which the parts separate does not follow the middle of the hammer. It follows the middle of the circular part at the ends, and then curves upward so that at the eye of the hammer the division is at the top. The joint between the two parts toward the ends of the hammer is freed and allows the metal to spread somewhat without forming a web between the dies.

A patent has been granted to F. T. Williams and J. C. Howell, of Llanelly, England, for the manufacture of spongy lead, to be used principally for secondary batteries

and accumulators. A perforated mold of the size and pattern of the plate or block required is inserted into a bath of crystallized and molten lead, which condition occurs during slow cooling. The mold is then removed from the bath, so as to allow the liquid metal to drain through the perforated bottom. In the mold is then left a block of crystalline porous or spongy lead. This block may be exposed, if desired, to the action of damp atmosphere to become oxidized. This is done to assist in what is known as the "forming" process of the plates. Finally, the edges of the plates may be compressed to increase their durability, and the indentations thus formed may be painted or covered with any suitable non-conducting material.

A miner's squib, intended to explode with greater certainty, has been invented by G. A. Ingram, of Plymouth, Pa. The paper shell or straw of the squib is immersed in a solution of water and saltpeter, powder or chlorate of potassium. Thus prepared, the shell will take fire from the least contact with the flame or dead-match when applied by the miner. The failure heretofore of this prompt ignition has been the main cause of many accidents, inasmuch as miners were frequently left in doubt whether the squib was properly lit or not. The match or fuse is formed separate from the shell or case, and is made from cardboard, paper or other suitable material, saturated or coated with copal varnish and tallow and cut into various shapes and sizes.

A light cast metal fence post for wire fencing has been patented by L. Goddard, of Winchester, Pa. The post is composed of a thin plate having a vertical flute or bulge at its center. This flute is cut through transversely at suitable intervals to receive the fence wire. The wire is locked to the post by a pin placed in the flute in front of the wire and at right angles to the cut. Beneath each pin is a rest for retaining it in position. A strengthening rib extends from the top to the bottom of the post along one side of the flute.

An invention which has for its object to prevent the vapor generated in a gas generator from being saturated with oil has been patented by the Standard Vapor, Fuel, Iron and Steel Company, of New York City. The oil is vaporized outside of the generator, and the vapor is forced under pressure into the mixing chamber, where it is met by a current of superheated steam forced into the chamber, also under pressure. The particular form of the mixing chamber is immaterial as long as it is provided with a steam-supply pipe, a vapor-supply pipe, and a vapor-exit pipe. The steam and vapor will become thoroughly mixed and produce a gas in which all the oil is vaporized. This gas is passed through the exit-pipe to the furnace, where it is burned.

C. C. Billings, of Boston, Mass., is the inventor of a machine for cold-drawing rods. The head of the clutch is mortised to receive the gripping jaws. The end of the rod to be drawn is inserted between them, and the jaws are then forced along inclined seats on the head until the rod is tightened. The die through which the rod is drawn is, with its die-seat, pivoted by a universal joint to the bed of the machine. By turning four adjusting screws the operator may tip the die and place it in the exact position desired. The machine with a die of proper shape is adapted to cold-draw and compress solid or hollow rods or articles either round or square or of other shapes.

The Cambria Iron Company of Pennsylvania are the assignees of all the right in a novel apparatus for coating wire with metal. The apparatus contains a wiper consisting of coils of fine wire which removes the superfluous metal from wire in the process of coating. The wire to be coated is first passed through a bath of melted metal and is held down by a sinker. It then passes through the wiping coils and between bars, on the under sides of which the wiping coils impinge. Finally, the wire, properly coated, is wound upon a reel.

The Wellsville Plate and Sheet Iron Company, of Wellsville, Ohio, have acquired the right in a wire-bending machine, in which continuous lengths of wire are so bent that regular shapes may be produced by cutting the wire at fixed intervals. The end of the wire to be bent is first passed between the blocks of a tension device, then through a straightening device, and finally through an opening of a former to which it is secured. As the former is revolved and the wire is wound upon it, a hammer drops upon the flat sides of the former and flattens the wire. Before the hammer again descends the next succeeding corner of the former will strike and fully raise it. This blow has the effect of bending the wire around the corner. The claim of the patent covers a wire-bending machine so constructed that the wire is made to conform to the shape of the former by a series of blows.

High Chimneys.

Speaking about large chimneys, a correspondent of a Western paper remarks that at the Port Dundee Works, Glasgow, Scotland, to be probably the tallest in the world. Its height from the foundation is 468 feet; above the ground, 454 feet, the foundation being 14 feet deep. The outside diameter on a level with the ground is 34 feet; at the top of it, 12 feet, 8 inches; thickness at the ground, 7 bricks; at the top, 2½ bricks. The internal diameter at the base is 20 feet, which gradually contracts to 10 feet 4 inches diameter at the top. There are no other human structures in the world higher than this chimney, except the steeple of the Strasburg Cathedral, which is 466 feet above the ground, and that of St. Stephen's Church, in Vienna, which is 465 feet high.

The most wonderful part of the story of this lofty chimney is that, having been twisted out of the vertical line to the extent of 7 feet 9 inches, by a violent wind, before the mortar was hardened, human skill reduced it to a perfect perpendicular again. The mortar was sawed out on the windward side, so as to allow the chimney to settle sufficiently to restore the perpendicular. Nearly 2,000,000 of bricks were used in the construction of this chimney, and it cost \$40,000. It is 150 feet higher than the cross on the top of the steeple of the New Trinity Church, in New York, and 90 feet higher

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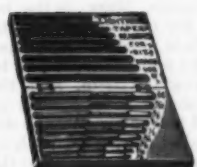
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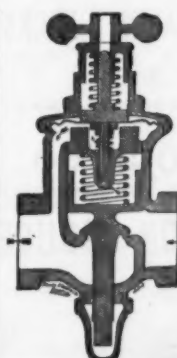
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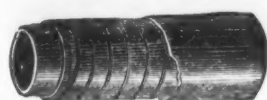
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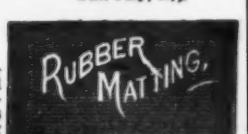
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BEST IN THE WORLD.For Packing the Piston Rods & Valve Stems of Steam Engines & Pumps.
B represents that part of the packing which, when in use, is in contact with the piston rod.
A the elastic back, which keeps the part B against the rod with sufficient pressure to be steam tight.
This Packing is made in lengths of about 20 feet, and of all sizes from 1/4 to 2 inches square.**Corrugated Rubber Mats and Matting,**

Pat. 11,208 1873,001.

For Halls, Flooring, Stone and
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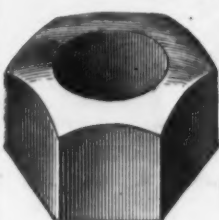
Pat. July, 1879.

This practical and indispensable arti-
cle—especially for wear where exposed
to ice, snow or slush—was first intro-
duced by this company several years
ago, and its real value is in its being
almost indestructible, when
proper materials are used in
its manufacture, whilst the cheap
inferior quality forced on the public by reckless imitators of our patent goods soon becomes brittle
and crumbles to pieces. Address**NEW YORK BELTING & PACKING CO.,**

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BEARINGS, SLIDE VALVES, CYLINDER RINGS, CROSS-
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and Non-Cutting Qualities are Desirable.**PUMP RODS,
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MACHINE and WOOD
SCREWS, &c., &c.**Combine Toughness, Strength, Durability and
Resistance to Corrosion.

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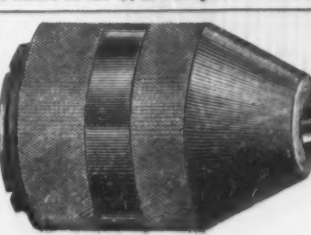


MARKS

"Phosphor-Bronze."
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SEND FOR PAMPHLET AND PRICES.**THE PHOSPHOR-BRONZE SMELTING CO., LIMITED,**

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**THE NEW GIANT DRILL CHUCK.**

Holds a Drill With the Grip of a Giant. All Steel.

Parts Interchangeable.
SIMPLE IN CON-
STRUCTION.EASY TO TAKE APART AND CLEAN. BEST OF WORKMAN-
SHIP AND VERY CHEAP. Manufactured and sold by**THE SMITH & EGGE MFG. CO.** Bridgeport, Ct.than the cross on the top of St. Paul's, in
London. The breadth of this chimney at its
base is 40 feet, or equal to the space occupied
by a large-sized house, and it gradually con-
tracts to 11 feet at the top.**Overhead Tramrails.**Many manufacturers are beginning to ap-
preciate that they are sadly lacking in appli-
ances for handling their material raw, fin-
ished and in process. Any device, therefore,
which tends to greater economy in handling
loads is a matter of general interest. We
illustrate herewith a system of tramrails
which for many situations is of great ser-
vice. The general advantages of an over-
head tramrail are that it is entirely out of
the way; that by means of curves, switches
and turn-table it can be made to reach any
desired part of a building or yard; that its
first cost is moderate; that it is perfectly
simple, and that it performs the duties of
more expensive appliances. The tramrail
illustrated is that which has been developed
and patented by the Yale & Towne Manu-
facturing Company, of Stamford, Conn.
It consists of I-beams which are bolted to
supports overhead by means of hanger bolts
passing through the top flange and into the
web of the beam. Running on the lower
flange is a four-wheeled trolley, which is
also patented, and the axles of which are
parallel to the upper side of the lower flange
of the beam. This parallelism insures the
easy running of the trolley, as friction is
very much diminished. The novel form of
hanging also enables the wheels of the trol-
ley to be as large as the depth of the I-beam
will permit, and this also further diminishesness, and is used for all the purposes of the
trade, excelling all other kinds as a lubri-
cant.The properties of graphite make it useful
for the following general purposes in the
arts: The manufacture of refractory arti-
cles, lubricants, electrical supplies, pig-
ments and pencil leads. The proportionate
amounts of graphite used for different pur-
poses is stated as follows: Crucible and re-
fractory articles, as stoppers and nozzles,
crucibles, &c., 35 per cent.; stove-polish, 32
per cent.; lubricating graphite, 10 per cent.;
foundry facings, &c., 8 per cent.; graphite
grease (for which only American is used), 6
per cent.; pencil leads (only American and
German), 3 per cent., the balance (6 per
cent.) being used for graphite packing,
polishing shot and powder, paint, electro-
typing, piano action, photographers', gild-
ers' and hatters' use, electrical supplies, &c.The earliest use of graphite was for pencil
leads, for which it was first used in 1387.
Its use for this purpose has become so ex-
tended that in 1882 over 150,000,000 pencils
were made in the world. Previous to 1827
black-lead crucibles were made only in Ger-
many. In that year the late Joseph Dixon,
the founder of the Joseph Dixon Crucible
Company, began their manufacture. Graph-
ite has long been used as a lubricant,
which is one of its most useful applications,
and one which promises most for the future.
The barriers which have prevented its exten-
sive use in this direction have been the price
and the difficulty of securing purity and
freedom from grit. These are now both over-
come, the price being now less than 25
per cent. of what it was 15 years ago, and
the purity, which was then only approxi-
mate, is now absolute.**OVERHEAD TRAMRAIL OF THE YALE AND TOWNE MFG. CO.,
STAMFORD, CONN.**friction. The track in the illustration is
used for transferring grindstones in a grind-
ing-room, but, as will be readily seen, may
be applied to any use, either inside or out-
side of the shop. The track may be either
hung from girders, as in the illustration, or
from brackets against the wall, or from an
independent trestle. The Yale & Towne
Manufacturing Company have erected many
miles of this track, and it has given the
greatest satisfaction. Attached to the trol-
leys are Weston differential blocks, by which
the load is hoisted and automatically held
suspended at any point, so that when the
operator has raised the load he merely has
to let go the chain and push or pull the load
to any desired position.**Graphite or Black-Lead.**The chapter in "The Mineral Resources of
the United States," published by the United
States Geological Survey, Department of In-
dustrial Statistics, is one of considerable in-
terest. The only place in the United States
where graphite is now mined successfully is
at Ticonderoga, N. Y. This property, owned
originally by the American Graphite Com-
pany, now belongs to the Joseph Dixon
Crucible Company, of Jersey City, N. J. The
American Graphite Company worked the
vein deposits to a depth of 600 feet. The
Dixon Company now mine a graphite schist,
15 feet thick, carrying from 8 to 15 per cent.
of graphite, practically an inexhaustible
supply. Numerous attempts have been
made to work the similar deposits of Penn-
sylvania and New Jersey, with only partial
success. The parties interested in these at-
tempts are: The Pennsylvania Plumbago
Company, the Eagle Plumbago Company, the
Phoenix Plumbago Company, all of which
have worked deposits in the Pickering Val-
ley, Pa. Other deposits have been worked
in Northern New Jersey, and others exist in
Georgia and California.In 1882 the output of the Ticonderoga
mine was 400,000 pounds. The outputs of
all the other mines during the same year are
stated at 25,000 pounds, making a total out-
put in the country in 1882 of 425,000 pounds.
The Dixon Company will produce 500,000
pounds in 1883, while the product of all
other mines will probably not exceed 25,000,
making a total output for 1883 of 525,000
pounds, having a spot value of 8 cents per
pound, or a total value of \$42,000. Graphite
is commercially known as German black-
lead, Ceylon plumbago and American graph-
ite. German black-lead is a product of Ba-
varia, and its price depends on its percentage
of graphite and the nature of its impurities,
ranging from \$1 to \$10 per cwt. in cargo
lots. It is used in the manufacture of pen-
cils, stove-polish and foundry facings. Cey-
lon plumbago varies in price from \$2 to \$10
per cwt. in cargo lots, and is used for all the
purposes of the trade except for making
pencil leads, for which it is not adapted.
American graphite ranges in price from \$2
to \$10 per cwt., according to purity and fine-The growth of the graphite industry has
kept pace with the age, each new develop-
ment in metallurgy and engineering offering
some new field of usefulness for graphite.
For instance, it furnishes the pots for the
manufacture of cast steel, and the nozzle,
and stoppers used in the Bessemer process.
Fifty years ago graphite was little known,
and misnamed. Now it is of constantly in-
creasing importance. From an insignificant
beginning in the present century, the indus-
try has grown to its present proportions.
There are now some 25 establishments en-
gaged in the manufacture of a great variety
of goods from this material, employing in the
aggregate over 1500 hands. Of these, three,
employing 725 hands, are engaged in the
manufacture of lead pencils exclusively.
One, the Joseph Dixon Crucible Company,
employing 500 hands, manufactures pencils
and everything else for which graphite is
used; six establishments, employing 104
hands; are manufacturing only crucibles;
nine establishments, employing 115 hands,
manufacture stove-polish. The remainder
manufacture foundry facings, lubricants, &c.**\$13,000,000 from Making Gunpowder.**Mr. Lammot Dupont, who was killed re-
cently by the explosion at Thompson's Point,
is said to have been worth \$13,000,000. He
had a controlling interest in the manufac-
ture of nearly all the high explosives that
were made in the United States and Canada
east of the Rocky Mountains. Ten million
pounds of these materials were consumed in
the country in 1882, the Repauno Company's
works at Thompson's Point producing one-
third of this amount. He is credited with
having organized a combination of all the
makers of high explosives. When nego-
tiating with the Panama Canal Company for
the powder to be used in that work, he guar-
anteed to supply 12 tons of Atlas powder
daily if that amount were needed. One of
the most daring achievements recorded in
the history of the present century is one of
which he was the central figure. During
the Crimean war the Russian Government
ran short of powder, and the explosive was
required to continue the defense of Sebasto-
pol. A cargo was purchased from the
Duponts, in this country, and was placed in
a steamship lying off Baltimore. The British
had frigates posted in waiting outside the
Chesapeake. After seven faints the watchers
were eluded and a chase began across the
Atlantic, through Gibraltar, and up the
Mediterranean Sea. With remarkably good
fortune the vessel passed through the Bos-
phorus and into the Black Sea unchecked;
but when nearing the place of contention
the English war-ships hailed the stranger.
Young Dupont was at the helm himself, and
insisted that the vessel proceed, not heeding
the signals from the war-ships. Two broad-
sides were fired into the vessel, but she was
able to steam ahead and steer through the
rocks, and was beached inside the Russian
lines. This daring adventure saved the
cargo, for which the Russian Government

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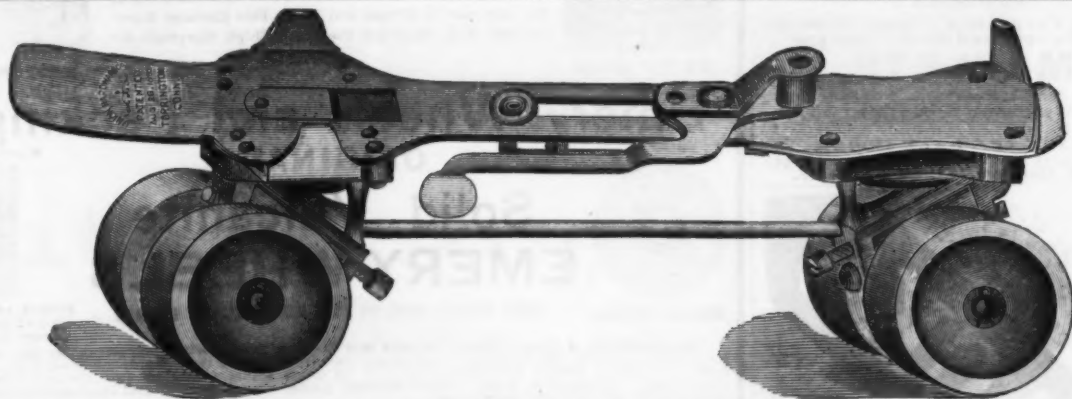
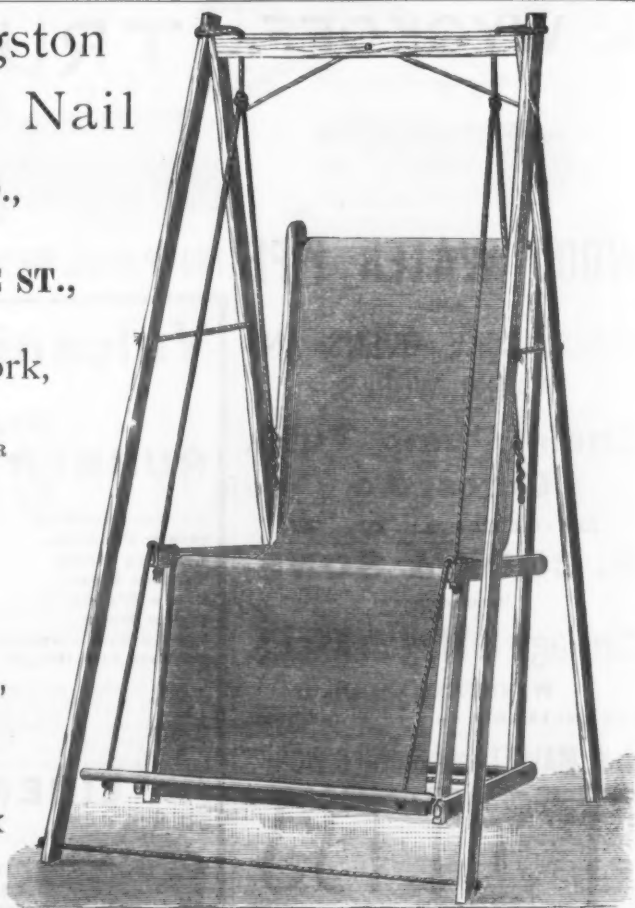
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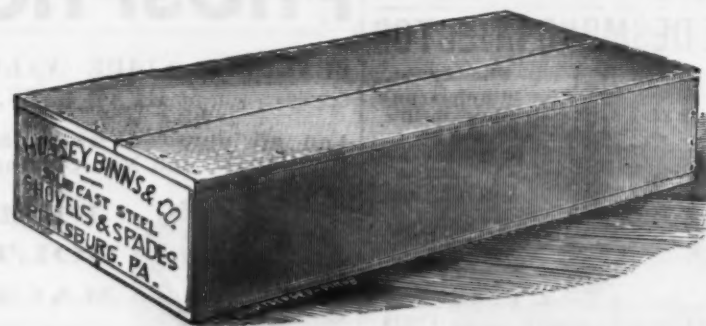
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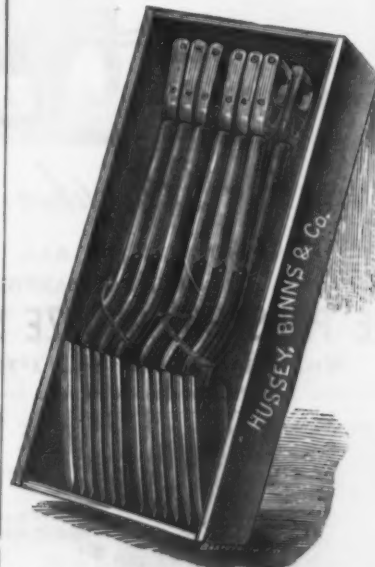
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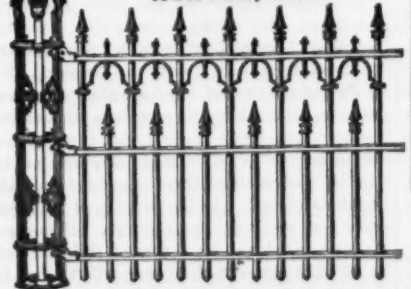
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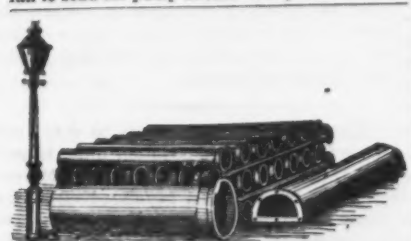
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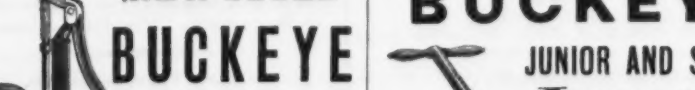


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paid the sum of \$3,000,000. Throughout the civil war the family rendered distinguished services to the Government, and at the very beginning of the Rebellion Mr. Lamont Dupont was placed in a position by which, through his energy and genius, the country was supplied with the means of defense for the ensuing conflict.

Shop Fittings and Fixtures.

Adaptations to the work in a shop are not always considered in the building of the premises or in the fittings up. For the reception of machinery, whether of tools in the shop or of machines in a manufactory, the floors should be of the most stable and immovable character, and conveniences should be a part of the plan. It is best, if the designer can begin from the beginning, to make an exact scale plan of each floor and the position of each machine. In some cases even the belt-holes through the floors can be sufficiently designated to prevent the unnecessary introduction of flooring beams and cross-braces. If the building is too far advanced, or the arrangements are to be made in a building once used, still a plot or plan of the building, or its floors, is an advantage to the millwright, and it should be made on a scale so that it could be studied quietly, rather than make a necessity of location of each machine and every belt-hole on the floor itself.

Such a scale plan, says an exchange, is invaluable to the man who has to "start an establishment." It is a wonderful help to the millwright to be allowed to look at the unfinished floors and suggest changes. If he is a competent man he can save more than his salary by being on hand during the laying of the floors. At the outset the competent millwright can save to the builders of a mill or shop many dollars for each day's work. A clean-laid floor in a building to be "rented with power" is frequently pointed out by the landlord or his agent as an inducement for hiring for occupancy; and yet portions of that handsome floor may have to be chiseled out and marred to suit the machinery that is to come in. It is better that the owners of the buildings for the reception of machinery satisfy themselves with a temporary floor while exhibiting their premises.

No shop that builds machinery of parts heavier than two men can easily lift should be without an overhead railway sufficient in its course and its switches to cover with its reaching lifts the entire area of the shop, or of that portion occupied by the heavy tools. With a few fixed cranes of the retractable jib type, the shop would be completely fitted for handling heavy pieces, and the abominable floor-truck could be pitched out of doors. One of these cranes, made wholly of iron, with a carrying capacity of 4 tons, and a jib that extends 14 feet, and when retracted can swing in a circle of 6 feet radius, will occupy but little room, the mast being only a few inches diameter.

But one of the most general lacks in the machine-shops is a fitting-up room for machinery. In gun-shops and sewing-machine factories, and in establishments for the production of other light articles, there is always an assembling-room where the parts are combined into the completed whole. Such a department is a great convenience in setting up heavier machinery. At present the unfinished machine in parts is scattered over the shop floor, in the way of the workers at vise, lathe, milling machine, drill and planer.

Engineers' Club of Philadelphia.

At the April meeting of the Engineers' Club of Philadelphia Mr. Henry G. Morris exhibited, on behalf of Mr. Israel W. Morris, two ancient and curious works upon mining—"The Golden Treasury, or the Complete Minor; being Royal Institutions or Proposals for Articles to Establish and Confirm Laws, Liberties and Customs of Silver and Gold Mines," by Thom. Houghton, London, 1699, and "A Collection of Scarce and Valuable Treatises upon Metals, Mines and Minerals," by James Hodges, London, 1740. The latter contains, *inter alia*, "How to Know the Condition of the Earth by Taste;" "Of Juices, and First of Allum;" "The Opinion that Quicksilver and Sulphur are the Matter Whereof Metals are Made is Defined;" "How to Know the Ill Qualities that Infect the Ore, and How to Purge Them Away;" "Wherein is Showed How True and Perfect Gold May be Made by Art, with Loss to the Workman," &c.

Mr. Henry G. Morris gave a brief description of an atmospheric elevator, consisting of a closed cage or car working in an air-tight well, the air pressure—supplied by a "Root" or other pressure blower—being admitted to the top or bottom of the cage in descending or ascending. The doors at the different stories opening inward, the pressure of air keeps them closed until the interior of the car is brought opposite, when, the pressure being relieved, the door can be opened into the car. The car being counterbalanced, only a comparatively slight pressure of air, equal to a water column of 6 to 8 inches only, is required to move an average load on a car 6 feet square. The escape of air beneath the car being at all times readily controlled by the attendant, it is impossible for the car to descend at a dangerous speed, and other obvious features render this form of elevator comparatively safe. Mr. Henry G. Morris also exhibited a sample of seamless copper tube which had been compressed endwise under a steam hammer, and showed peculiar foldings of the metal into overlapping equilateral triangles, forming an interior hexagonal section. The absence of fractures showed great purity of material.

Mr. John T. Boyd described a new design for parlor cars for the Pennsylvania Railroad. The secretary presented, for Mr. Edward Parrish, an illustrated description of Powers' disinfecting tank and automatic syphon. The secretary presented, for the reference book, a table which he had prepared of vulgar fractions of 1 inch reduced to exact decimals of 1 inch. Mr. William L. Simpson exhibited a remarkably perfect casting of a toad, the pattern used being the toad itself.

The 1st inst. was characterized by quite a number of labor troubles, though none of them were specially serious. The district

convention of miners, at New Straitsville, Ohio, refused to consider a proposition from the operators for a reduction of 10 cents. Five hundred track-layers and laborers on the Ontario and Quebec Railroad struck for higher wages. Four hundred Italian laborers employed by the Pennsylvania Schuylkill Valley Railroad, at Reading, struck for \$1.35 per day, an advance of 10 cents; they were paid off and discharged. In Buffalo 20 laborers at the Lake Erie freight-house, over 50 handlers in the Central freight-house and 30 handlers at the Lake Shore freight depot, struck for higher wages. Their places were filled by Italians and non-union men.

The Brown-Bonnell Iron Company.

The following is the scheme for the reorganization of Brown, Bonnell & Co.'s affairs, which was approved at a meeting of the creditors at Youngstown, Ohio, on the 29th ult., and seems reasonably certain of being adopted by all of them:

1. Organize a new company, to be called the Brown-Bonnell Iron Company, with a capital stock of \$1,200,000, for the purpose of the purchase and operation of the works and property of Brown, Bonnell & Co.

2. The stockholders in Cleveland of Brown, Bonnell & Co. who hold claims secured by mortgage to take all their said claims in the stock of the new company—about \$162,500.

3. All other creditors who are willing to do so to take 60 per cent. of their claims in stock, and the remaining 40 per cent. to be paid as follows: 10 per cent. of valuation of claim in cash on purchase of property by new company; 10 per cent. of valuation, one year after date at 6 per cent. interest; 25 per cent. two years after date at 6 per cent.; 25 per cent. three years after date at 6 per cent.; 30 per cent. four years after date at 6 per cent.

4. Above-named notes to be paid ratably by the company earlier than by their terms they are due if in the judgment of the directors this can be done without prejudice to the credit or business of the company, and in no event are dividends to be paid to stockholders until all said notes are paid.

5. Two hundred thousand dollars to be paid by D. P. Eells, W. H. Harris, C. A. Otis, S. Mather and J. Hay, payable 25 per cent. when required for purposes named in Article 6, 25 per cent. in four months, 25 per cent. in eight months, and 25 per cent. in twelve months, with interest on all deferred payments at 6 per cent. from date of purchase of the property, for which they are to receive stock in the new company at same rate as creditors named above.

6. Creditors who prefer shall be paid 50 per cent. of their claims in cash in full upon the assignment of their claims for the benefit of the company.

7. All claims against Brown, Bonnell & Co. acquired by the new company, as above, to be assigned without cancellation to the new company, without prejudice to any right of recovery which may attach to such claims against stockholders of Brown, Bonnell & Co., on their personal liability as such stockholders, and without prejudice to any other legal rights. But the stockholders of Brown, Bonnell & Co. who pay in the \$200,000 to the company, and those to whom they have conveyed their stock, including H. P. Eells, P. E. Newberry, E. A. Witt and D. P. Eells *et al.*, trustees, to be indemnified and held harmless by said new company, in consideration of the payment by them of said \$200,000 and of their taking stock for the amount of their claims, which are secured by the pledge of the maturing bonds of said company, the entire amount of the stock of Brown, Bonnell & Co., the holders of which are hereby agreed to be indemnified against their liability of said stockholders, being \$300,000.

8. Seventy-five per cent. of the indebtedness of Brown, Bonnell & Co. to be secured as assenting to this proposition before it shall become binding. Interest at 6 per cent. on all claims from date of maturity to the maturity of the claim, last maturity to be allowed and no interest on any claim after that time.

9. Any creditor shall have the right to take the whole amount of his claim in stock.

Trade at St. Louis.—Notwithstanding the many complaints which have been made by local manufacturers and merchants about the depressed condition of trade, especially during the first quarter of the year, says the *Age of Steel*, the receipts of eight leading articles of commerce in this market, viz., iron ore, zinc ore, pig iron, nails, pig lead, tin, coal and coke, compare very favorably with those of former years. We present in this connection the receipts of these articles for the first quarter of each of the three years indicated below:

	1882.	1883.	1884.
Iron ore, tons	29,432	12,734	61,046
Zinc ore, tons	6,712	3,719	4,289
Pig iron, tons	23,121	21,839	27,117
Nails, kegs	161,534	110,037	142,493
Lead, pigs	281,213	258,876	254,096
Tin, boxes	11,612	20,635	28,523
Coal, tons	426,365	433,298	492,384
Coke, tons	77,276	14,480	28,287

The *Two Republics*, the only English daily in Mexico, recently announced the development of an enterprise that may have some influence on the future of Mexico. This is the purchase of 200,000 acres of alleged coal lands in the northern State of Coahuila by a strong syndicate composed of Huntington, Crocker and others. The mines are within 10 or 12 miles of the line where the International road is laid out, and but little further from the National road which is finished past that point, and which, if the find should prove valuable, will no doubt run a branch up for their accommodation. The development of a mine of good coal would be of great value, for while Mexico is traversed by immense forests, stretching from Guatemala to the Rio Grande, and bearing in great abundance almost every kind of wood known to the world, the people of Mexico have no wood to burn. For there are no rivers and canals, and the wood supply is distant from the centers of population. So from prehistoric times the almost universal fuel of Mexico has been charcoal, which, produced in the great forests, is borne to the cities, towns, and sometimes hundreds of miles away on the backs of men and donkeys.

The Iron Age

AND
Metallurgical Review.

New York, Thursday, May 8, 1884.

DAVID WILLIAMS, Publisher and Proprietor.
JAMES C. BAYLES, Editor.
JOHN S. KING, Business Manager.

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One square (12 lines, one inch), one insertion, \$2.00;
one month, \$5.00; three months, \$15.00; six months,
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BRITISH AGENCY.
Office of THE IRONMONGER, 44 Cannon St., London.

DAVID WILLIAMS, Publisher,
43 Beale Street, New York.

PITTSBURGH: J. D. WEAVER, Manager and Associate Editor,
77 Fourth Avenue.
PHILADELPHIA: T. H. HOBSON, Manager,
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The Labor Situation West.

A very important meeting of the Manu-
facturers' Association, which was formed
during the strike of 1882 and brought it to
a successful conclusion, was held in Pitts-
burgh last Thursday. According to the
reports that were given out of the meeting,
it was one of the most largely attended that
has been held since the inauguration of the
strike of 1882. The manufacturers were
exceedingly chary of information concern-
ing the result, but they have authorized the
statement that a resolution was passed
indorsing the action of the Committee of
Conference in refusing the demands of the
Amalgamated Association, and in asking for
a reduction of 10 per cent. on the present
scale of prices, and also that the meeting
had agreed to insist upon these demands,
even to the extent of a stoppage. The man-
ufacturers and workmen are thus brought
face to face with the possibility of another
stoppage of work in the West, with all
that it implies of suffering and debt on
the part of the workmen, and of loss
of trade to the manufacturers. It would
seem that a careful review of the situation
in the presence of unquestioned facts should
lead the workmen of the West to concede
the small reduction that is asked by the
manufacturers. Certainly since the selling
price reached 2 1/2-cent card, which is the
minimum rate of the wages scale, there has
been such a reduction in the selling price
of product as to justify the demand for a 10
per cent. reduction in wages. The work-
ingmen have conceded reductions in other
industries, which are pressing the iron trade
severely, whose product is competing with
iron, and will force it out of the market or
compel a reduction in the cost of production.
The manufacturers in the eastern part of
the Western territory, who send their iron
both East and West, are obliged to compete
in the Eastern market with iron made at
wages that were not only in the normal
state of the market below those paid in the
West, but with wages that have been con-
siderably reduced since any reduction has
been conceded in the West.

These are facts the force of which the
workmen seem to concede, but, according
to the statements in the Pittsburgh papers,
their answer to them is that any reduction

in wages would not benefit the manufactur-
ers, as it would be immediately given away.
This is no doubt true. Some business men
seem to be so constituted that immediately
upon receiving any concession which will
enable them to produce cheaper, instead of
taking that benefit to themselves, they give
it to the consumer. If freight is reduced 50
cents a ton, they will reduce their price 60
cents; if coal mining is reduced 1/4 cent
a bushel, the price of coal will be re-
duced fully that sum; and we have no doubt
that if the price of labor was reduced in the
iron mills there would be somewhat of a
reduction in the price of iron at some
mills; but if such reduction is made, it
will be made to enable the manufacturers
in certain sections to compete with those
in other sections who, by reason of lower
labor or less freight, have the advantage.
The argument of the workmen and their
reasons for refusing a reduction would be
sound were all the manufacturers of the
country on an equality; then a reduction in
wages, perhaps, might be uncalled for. But
when no such equality exists, when there
are inequalities growing out of the financial
condition of the rolling-mill manufacturers,
growing out of their location, growing out
of their facilities for turning out work, and
especially when there are inequalities in rates
of wages, then the argument is a fallacy.

Statistics of American Iron and Steel Production in 1883.

We are in receipt of advance sheets of
the annual report of Mr. James M. Swank,
secretary of the American Iron and Steel
Association, containing the statistics of the
production of iron and steel in the United
States in 1883, as compared with preceding
years. From the tables contained in the
pages of this exceedingly valuable annual
we have compiled the following compre-
hensive summary of the quantity of the various
kinds of iron and steel produced in 1883, as
compared with 1882:

	1883. Net tons.	1882. Net tons.
Bituminous pig iron.....	2,689,650	2,438,078
Anthracite pig iron.....	1,855,596	2,042,138
Charcoal pig iron.....	571,730	697,936
Total pig iron.....	5,116,976	5,178,152
Spiegeleisen (included above).....	94,574	91,963
Bessemer steel rails.....	1,298,554	1,138,155
Iron rails.....	64,054	227,874
Open-hearth steel rails.....	9,186	22,765
Total rails.....	1,369,694	1,388,794
Bessemer steel rails rolled in iron rolling mills (included above).....	32,639	103,806
Street rails (included above).....	19,440	22,266
Bessemer steel ingots.....	1,654,627	1,696,450
Crucible steel ingots.....	81,455	85,099
Open-hearth steel ingots.....	185,673	165,548
Blister and puddled steel.....	5,336	8,014
Total steel of all kinds.....	1,874,339	1,945,005
Cut nails, kegs.....	7,768,787	6,147,097
Cut nails, tons.....	388,136	307,354
Plate and sheet iron, except nail plate.....	384,362	412,814
Bar, hoop and shaped iron.....	1,311,422	1,545,788
Total rolled iron, including nail plate and iron rails.....	2,348,874	2,493,881
Iron blooms and billets from ore.....	35,297	48,354
Iron blooms from pig and scrap.....	39,321	42,989
Total iron blooms.....	74,738	91,363

A study of this table will convey a very
clear idea of the extent and variety of our
domestic iron and steel industry, as well as
the changes which have been made in pro-
duction in the past two years. It will be
seen that, generally speaking, the year
1883, though a year of declining prices and
unsatisfactory business, witnessed but a
slightly decreased output as compared with
1882, when the condition of trade was much
more cheerful. In some branches, indeed,
there was an increased production in the
later period. More bituminous pig iron,
more spiegeleisen, more blister and puddled
steel and more cut nails were turned out in
1883 than in 1882. The decline in the pro-
duction of anthracite pig iron, occurring
contemporaneously with the increase in the
output of bituminous pig iron, causes Mr.
Swank to remark as follows:

The only noteworthy exception to the general
adjustment of prices on a lower plane was fur-
nished by the anthracite coal producers, who
scarcely recognized the decline that had taken
place in the prices of pig iron. If the policy
of maintaining high prices for anthracite coal is
insisted upon, the production of anthracite pig iron
must steadily decline. As our statistics will show,
it experienced a serious decline in 1883, whereas
the production of bituminous pig iron increased
in the same year. With the exception mentioned,
the decline in prices was equitable and compensa-
tory; the inevitable shrinkage was evenly borne
by all branches.

In considering the future of the American
iron and steel industries, Mr. Swank points
out a number of facts which favor a hopeful
view of the years to come, but discusses at
length a matter which must be taken into
serious consideration, as follows:

The events of the last few years have dispelled
the illusion from the minds of all but the most
thoughtless that these industries or any other
American industries can be indefinitely developed.
There is a limit beyond which all attempts to force
the development of mechanical or agricultural in-
dustries must be attended with serious loss. A
country can consume and pay for just so much
and no more of any product, and any surplus
of that product that it may have for the supply
of other countries can be disposed of, if disposed
of at all, only in conformity with the same law. Eu-
ropean countries are compelled to bend to the
requirements of this law, and this country can form
no exception to it. In times past we have been too
prone to believe that our industrial opportunities
were boundless, and that our industrial activity
could, therefore, never be too pronounced or ag-
gressive. The panic of 1873 suddenly challenged the
correctness of this impression, and the years which
immediately followed were years of humility, and
not of boasting. The year 1879, however, brought

another period of industrial excitement, and with
it a partial revival of the old belief in our industrial
omnipotence. We had at last an abundance of
good money; why should there not be unlimited
activity and unlimited prosperity?

The bounding prosperity which 1879 ushered in
lasted only until 1882, since the beginning of which
year the country has been gradually settling down
to the industrial position it now occupies, which is
midway between great exaltation and great de-
pression, and which, joined to our experience
under the panic of 1873, must virtually end the
illusion that this country cannot produce too much
of any commodity. With this illusion dispelled;
with capital taught that it need not make what the
people cannot buy; with would-be farmers taught
that we can produce more wheat than we can sell;
with immigration narrowed to reasonable bounds
because labor in this country is already in excess
of the demand for it; with our mechanical indus-
tries so fully developed and so skillfully managed
that competition will be certain and endless, it may
reasonably be expected that excited markets and
inflated prices will be things of the past, while low
prices will help to hold in check the evil of over-
production. Steadiness in demand and supply is
what the country needs, and what it has conspicu-
ously lacked in recent years. This means a slower
growth than accompanies periods of industrial ex-
citement, but a slow growth is a healthy growth.

There is much more in this annual report
which is worthy of republication and com-
ment, but want of space forbids more ex-
tended reference to it. We will merely add
that the value of Mr. Swank's statistical
work grows with every year, his latest effort
in this line surpassing in completeness and
comprehensiveness any of his previous
achievements.

Sailing Under False Colors.

The following news item, which appeared
in the city journals last Friday, naturally
attracted some attention:

A circular has been issued, signed by 13 New-
York firms, calling a special meeting of manufac-
turers at the Windsor Hotel for next Thursday at
8 p. m. Their co-operation is asked to secure "the
abolition of all duties on raw materials" and "the
adjustment of the tariff so that manufactures ap-
proaching nearest the crude state will pay the
lower rate, and manufactures that have further
advanced will pay the higher rate of duties." The
object of the meeting is to bring pressure to bear
upon Congress to attain these ends.

From the phraseology of the notice the
inference seemed warranted that the manu-
facturers of this locality were about to take
an active part in the "tariff reform" move-
ment. It looked more particularly as though
producers of saleable articles from crude
materials were growing restive under the
imposition of duties upon the ores, &c., which
form the basis of their manufacturing opera-
tions. In seeking more light upon the sub-
ject we secured a copy of the circular itself,
and herewith reproduce it in full:

NEW YORK, APRIL 24, 1884.
DEAR SIR: You are invited to attend a special
meeting of manufacturers to be held at the Win-
dors Hotel, May 8th, at 8 p. m., in the interest
of such measures of tariff reform as seem essential to
the more rapid progress of manufacturing indus-
tries in this country. The objects for which your
co-operation is solicited are:

First.—The abolition of all duties on raw ma-
terials, such as wood, iron and other ores, coal, lime,
hemp, flax, dye-stuffs, &c., in order that we may
compete in home and foreign markets with other
manufacturing nations, not one of which taxes
raw materials.

Second.—The adjustment of the tariff so that
manufactures approaching nearest the crude state
will pay the lower rate, and manufactures that
have further advanced, requiring more skill and
labor, will pay the higher rates of duties.

The attainment of these objects would cheapen
the cost of many of the necessities of life, relieve
our home markets from the burdens of overpro-
duction, increase the demand for labor, enlarge
our commerce, besides placing our manufacturing
industries on a solid, self-sustaining basis. It is
important to bring this forcibly before Congress,
especially as the opinion has gained currency there
that the manufacturers of the country are in-
different upon the question of free raw materials.
Please sign the inclosed postal card and mail it to
its address. No assessment will be made.

Respectfully yours,
FRANK O. HERRING, of Herring & Co.
R. H. WOLFF, of R. H. Wolff & Co., Limited.
UNITED STATES STAMPING CO.
ALEXANDER E. KUHNHEIT, of Kuhnheit Mfg. Co.
MEYER JOHANSON & CO.
WERN & BECKER, MFG. CO.
MAYNARD SAFE CO.
J. B. BROWN, President N. Y. Flow Co.
S. C. HOWARD, of Howard & Son.
WILLIAM DEAN, of Dean Woolen Co.
GEO. H. PUTNAM, of G. B. Putnam's Sons.
JAMES M. CONSTABLE, of Arnold, Constable & Co.
J. SCHOENHOF, of Adler & Schoenhof.

An examination of the city directory dis-
closes the fact that the first firm named man-
ufacture safes. It will hardly be claimed
that safes are made of "raw material." The
second firm manufacture wire from im-
ported wire rods, which are very far re-
moved from the state of nature in which
iron is found. The third name is that of a
manufacturer of tinware made, of course,
from imported tin plate. The fourth is a
manufacturer of trimmings for ladies'
dresses, &c. The fifth make cloaks. The
sixth is that of a tool-manufacturing com-
pany. The seventh that of a safe-manu-
facturing company. The eighth, a manu-
facturer of plows. The firm occupying the
ninth place in the list does not appear in the
city directory, but S. C. Howard's name is
given as a dealer in jewelry. Nor does the
tenth name appear in the city directory,
though we naturally infer that a woolen
company weaves some sort of fabric from
wool, which is affirmed to be a raw material
by the consumers of it, and very far from a
raw material by the growers. The eleventh
name is that of a prominent publishing
house. The twelfth, that of a leading dry-
goods firm, and the last-named firm man-
ufacture ladies' skirts.

A movement in favor of free raw ma-
terials which owes its origin to such a com-
bination of interests as is here presented can
certainly not claim to properly represent the
views of actual manufacturers upon this
point. Yet they all seem to regard them-
selves as manufacturers, as the circular

makes no allusion to the interests or opinions
of merchants or importers. The closing
statement in the circular is therefore very
cool—namely, that it is important to bring
this question forcibly before Congress, as
the opinion has gained currency there that
the manufacturers of the country are in-
different upon the question of free raw ma-
terials.

It will be observed that the circular has
upon it no address, being merely dated New
York. An accompanying postal card bears
the printed address of J. Schoenhof, Chair-
man Merchants' and Manufacturers' Com-
mittee, 39 Nassau street, and on the reverse
side appears this statement, to be signed and
returned to Mr. Schoenhof:

I agree with the purposes expressed in the cir-
cular calling a meeting of manufacturers to the
Windsor Hotel for May 8, and shall endeavor to be
present.

It may be remarked that No. 39 Nassau
street is also the address of the New York
Free Trade League, and that the circular is
issued from their office.

Important Legal Decisions Affecting Labor.

A case in connection with mine labor has
recently been decided in the courts of Mer-
cer County, Pa., which has involved two
points of considerable importance. One is,
What constitutes a notice to quit? and the
other the interpretation of an act of Assembly
requiring pay for mining all sizes of
merchantable coal. The miners had been
working under an article of agreement by
which they were to give 30 days' notice
before quitting, the company to give similar
notice of a reduction, and to retain 10 per
cent. of the wages of the miners, payable at
the end of the year, or at the next pay day
after discharge or voluntary retirement. The
company gave 30 days' notice of a re-
duction, and at the expiration of the time
the miners quit. The 10 per cent. retained
was refused them on the ground that they
had given no notice, and also because they
retained the houses of the company occupied
by them after they had stopped work, which
was contrary to the article of agreement. The
Judge instructed that the notice to the
miners of a reduction at the end of 30 days
was in effect a notice of discharge. The
men, having received that notice, were not
under any obligations to give the company
notice that they would quit at the expiration
of the term. The Judge also held that the
miners were entitled to demand the 10 per
cent. back pay.

A more important question than this, how-
ever, was brought up in connection with the
suit of the miners to recover for nut coal
under the act of Assembly which requires
coal operators to pay "for the mining of all
"sizes of merchantable coal so mined by
"him, whether the same shall exist in the
"form of nut or lump coal," unless a con-
tract to the contrary has been made. The
court held that as lump was the only coal
paid for by the well-understood custom of the
mine, and the miners having shown by their
monthly receipts that they fully understood
this, the contract was "implied," and as
strong as though written and signed, and
there could be no recovery. If a miner had
made a contract to work at a certain amount
per ton, and at the end of the month were
to say, "I did not understand this matter,
and I will not take the pay except for
"lump and nut coal," he could then demand
it and recover it; but if he goes on and
receives the pay at the agreed rate per ton
for lump coal only, knowing that he is being
paid in that way, then he cannot afterward
back out of it and say, "I will go back on
"the arrangement and demand pay for the
"nut coal." Judge Bredin said: "Acts of
"Assembly of this character have been
"passed from time to time, and as far as
"our knowledge goes, have been of very
"little benefit to laboring men; in fact,
"no benefit, because, after all, it comes back
"to the question, 'What is the contract?'"

Ocean Transportation.

Dolorous accounts continue to be received
from all parties concerned in ocean steam
navigation. Instead of profits, most of the
steamers in the Transatlantic trade report a
heavy deficit. True, the prospects of a re-
munerative pleasure travel the coming
season afford a cheering ray, as all the fleetest
steamers are likely to run full, and it is
thought probable that a large immigration
may be stimulated by the unprecedentedly
low current charges; but, the "North Atlan-
tic Conference" having been dissolved, there
remains no power to enforce measures for
mutual protection, so that a ruinous war of
rates may follow. As for freights, it is no-
torious that in some instances it is cheaper to
carry ballast than to accept the prices now
offered by shippers—a state of things due
in a large measure to the folly of grain specu-
lators, who have succeeded in forcing prices
above the parity of European markets. The
difficulty now so direful in its effect upon
owners of steamship stock (who are found
all through the United Kingdom among
those who have saved anything from
their earnings) arises from the superabund-
ance of steam tonnage. The great "boom"
in the British shipyards announced from time
for several years past was the precursor
of the certain collapse. The London *Times*
says there is about 25 per cent. too much
tonnage for the work to be done. In short,
it is the same old story—"overproduction."
Last year the registered tonnage of the

United Kingdom reached the enormous
aggregate of 3,725,220 tons, which is
an increase of 500,000 tons in a twelve-
month. The latest proposition under discus-
sion, viz., the withdrawal of one-fourth of
the available tonnage, is found to be imprac-
ticable, but some other measure of relief
may be devised equal to the emergency. It
will be strange, indeed, if American ship-
pers are unable to market our staples profit-
ably under conditions so favorable to cheap
transportation.

Imports of Metals at New York in April.

The imports of iron and steel at the port
of New York were comparatively heavy
during the month of April. According to
the Custom House returns, as classified by
the secretary of the Metal Exchange, the
total quantity of iron and steel imported
here in April was 42,003 tons, against 35,061
tons in April, 1883, and 32,122 tons in March
of this year. The increase was in pig iron,
spiegeleisen, steel blooms, steel rails and iron
wire rods. The following table shows the
details of the imports in each month men-
tioned:

Metals.	April, 1884. Tons.	April, 1883. Tons.	Mar., 1884. Tons.
Pig iron.....	10,600	5,305	7,983
Spiegeleisen.....	5,300	4,912	4,142
Old rails.....	29	54	71
Scrap iron.....	450	1,653	701
Scrap steel.....	650	1,944	94
Steel blooms.....	1,198	.....	767
Steel rails.....	4,328	1,659	4,659
Steel wire rods.....	7,342	9,621	4,171
Iron wire rods.....	2,107	439	1,979
Swedish iron.....	630	839	878
Iron bundles and bars.....	116	43	34
Hoop iron.....	62	399	.....
Sheet iron.....	241	214	347
Steel bundles, bars, &c.....	530	382	466
Steel tires and forgings.....	146	392	145
Total.....	33,031	36,576	29,854
Tin plates.....	8,972	8,486	8,368
Grand total.....	42,003	35,061	38,222

The miscellaneous metal imports in the
same months were as follows:

	April, 1884. Tons.	April, 1883. Tons.	March, 1884. Tons.
Iron ore, tons.....	3,339	5,055	1,700
Slab and ingot tin, tons.....	606	1,267	403
Copper (old), pounds.....	3,486	5,513	3,051
Brass (old), ".....	2,280	20,120	1,707
Pig lead, tons.....	353	355	65
Spelter, tons.....	85	168	.....
Sheet zinc, tons.....	56	64	84
Scrap zinc ".....	56	13	19
Reg. antimony, cks.....	296	307	379
Nickel alloy, pounds.....	22,210	.....	25,400

The following table shows the stocks of
iron and steel in the United States bonded
warehouses at this port at the beginning of
the year, on the 1st of April and on the 1st
of May:

	Jan. 1, 1884. Tons.	April 1, 1884. Tons.	May 1, 1884. Tons.
Pig iron.....	2,306	2,971	3,164
Spiegeleisen.....	1,432	608	664
Old rails.....	1,135	1,135	1,135
Scrap iron.....	1,177	784	476
Scrap steel.....	806	806	806
Steel rails.....	121	128	128
New iron rails.....	58	42	42
Steel wire rods.....	5,666	4,591	4,044
Iron wire rods.....	2,446	585	525
Swedish iron.....	2,649	1,997	1,739
Sheet iron.....	42	42	42
Russia sheet iron.....	73	68	68
Steel bundles, bars, &c.....	155	155	183

The Italians have in recent years been
rapidly supplanting the Irish as railroad
laborers. The prime cause has been their
willingness to work for lower wages than
their Irish competitors. As they become
more acquainted with the ways of the coun-
try, however, they are not slow to compre-
hend the possibilities of the labor situation,
and when they think a favorable opportu-
nity offers they strike for higher wages, after
the most approved American fashion, with
all its variations and accompaniments, save,
perhaps, one. They do not seem yet to com-
prehend that when they strike they should
also endeavor to retain their employment by
forcibly preventing other laborers from tak-
ing their places. An illustration of this took
place last week at Reading, Pa. Some 400
Italians, employed on the new railroad now
being built through the Schuylkill Valley by
the Pennsylvania Railroad Company, struck
for an advance from \$1.25 to \$1.35 a day.
The contractors immediately paid them off
and discharged them. A day or two after-
ward the Italians heard that another force
of laborers was about to be engaged to take
their places, and they straightway sought to
be taken back. The contractors very un-
feelingly took advantage of the unsophisticated
children of sunny Italy by rehiring
them at \$1.15 a day. This particular strike
was, therefore, a boomerang. When the
participants determine to engage in a similar
movement they will doubtless first consult
over the possible result.

Electric wires have come to stay, and
space for their accommodation must be pro-
vided, above ground or below. Morse's
original idea has been expanded until now
there is no assignable limit to the use of
electricity through wire conductors. A com-
mittee representing our principal electric
companies in this city, after examining a
large number of devices relating to under-
ground systems, decide that a subway of
sufficient capacity for future demands is
essential. They suggest the appointment of
a commission by the Legislature to prescribe
routes, charged with functions similar to
those of the Rapid Transit Commission, and
intimate that the City Government might
assume the entire responsibility for the
work, all companies to be charged a rental
for the accommodation they may receive.

It certainly is worthy of consideration whether control by the city might not give more equitable results than private ownership.

The Proposed Bureau of Labor Statistics.

The Hopkins bill for the establishment of a national bureau of labor statistics has passed the House, and is now on the calendar of the Senate for action. The vote on this bill in the House was a surprise even to the friends of the measure. Out of the 202 votes cast, but 19 were in the negative, 183 Members, including some of the most prominent of both political parties, voting for it. The bill was somewhat changed from the form in which it was originally introduced. As finally passed it provides for the establishment of a bureau of labor statistics in charge of a commissioner appointed directly by the President and responsible to him, and not to a cabinet officer. He is instructed to acquire all useful information upon the subject of labor, its relation to capital and the means of promoting the material, social, intellectual and moral prosperity of laboring men and women, and to this end is instructed to inquire into the various industries of the United States, the capital invested, the division of labor, machinery and its effects, convict labor, Chinese labor, child labor, rates of wages, hours of labor, earnings, truck system, profits, prices of necessities of life, accidents, inspections—indeed, all information bearing on the general subject of labor. The chief is authorized to employ such assistants as he may deem necessary for the successful working of the bureau, providing that the total expense shall not exceed \$25,000. The bill must now take its chance in the Senate. This body has already refused to consider a similar bill presented by Senator Blair. What effect the passage of this bill by the House will have upon the Senate remains to be seen; but it is probable that, in view of the demand for such a bill by the laboring portion of our community, the Senate will pass it.

Of the need of the information which it is intended that this bureau shall collect there can be no question. The value of the bureau will depend largely upon the person who is placed at its head. If he is an honest, intelligent man, who has the good-will not only of workmen, but of the employers, of the country, the information that he can collect will be of the utmost value. On the other hand, if he is a man who has the good-will of only one portion of the community, and either the positive ill-will or is under suspicion of the other portion, his report will be one-sided and of but little value. Whether the proper man to successfully carry out the design of the framers of this bill can be secured for \$3500 a year remains to be seen.

A Crisis in Mexico.

Mexican financial affairs seem to be in a bad way. The Government have been liberal to the verge of recklessness in granting aid to schemes of internal improvement, pledging for that purpose so much of their receipts from customs and other sources of revenue that great embarrassment is experienced in meeting ordinary public expenses. Extraordinary taxes have been levied, an unpopular stamp tax has been imposed on sales of merchandise, and import duties have been raised. It is even reported that the Government are forcing the citizens to make loans to them, which is a method only in vogue under despotisms. As may be inferred from such a condition of affairs, domestic and foreign trade has been seriously injured, banking institutions are in difficulty, and there is a possibility of such disastrous consequences as will precipitate a revolt against the constituted authorities, to be followed, if successful, by a reaction against the progressive movements so successfully inaugurated in Mexico.

The people of the United States are deeply interested in these developments, because they have in late years invested an immense amount of capital in permanent improvements in that country. Boston capitalists are most heavily interested, as the Mexican Central Railroad, which is the principal line in Mexico, is almost exclusively owned by them. The building of that railroad and other lines controlled by Americans has induced capital to flow from this country into other Mexican enterprises which bade fair to be remunerative as soon as the two countries began to make the interchange of commodities which the new lines of communication would encourage. The consequences of a general Mexican uprising against the present administration, and the possible destruction of property that would ensue, are so serious that our own Government would seem warranted in taking steps for the preservation of the property of their citizens. The annexation of Mexico is hardly to be desired, and a movement in that direction would meet with much opposition, but it is certainly in order for the United States to take such measures as will secure to our enterprising citizens the fruits of their courage in making such heavy investments for commendable purposes in our neighbor's territory. If the United States refuse to do this, and the American stockholders in Mexican railways should suffer immense losses, our Government would deserve the scorn and contempt of the civilized world.

Much damage has been done to standing timber by fire in various parts of the country during the past week. A fortnight of dry

weather prepared the woods, meadows and waste land for ravages by fire, which only needed a beginning to cause terrible havoc. From numerous localities reports have been received of serious losses sustained by iron works which use charcoal fuel. Not only have large areas of standing timber been burned from which they obtain supplies, but wood already chopped for coaling has in several instances been consumed, together with buildings of more or less consequence. These forest fires are a serious element to be taken into consideration in the manufacture of charcoal pig iron, and their prevention is a problem which is discussed at almost every gathering of those interested in the business.

Changes in the Copper Market.

Since our editorial on copper a month ago a great change has occurred in the European market, and a large sale of Lake has been effected in our own. As was but natural, the interpretation which people on the other side put upon the low sale of 6000 tons of Lake Superior copper over there was that production here would be enormous, and that, fearing a still larger depreciation in value by reason thereof, the leading mine, on behalf of itself and the remaining companies associated in the transaction, preferred to make a sure thing by selling for months ahead. The announcement of the sale, consequently, at first threw the holders of copper in Europe into a worse panic, for a day or two, than they had been laboring under previously; but the market soon righted and assumed a tolerably steady turn in the opposite direction. The fact is that statistics on the other side were so eminently favorable that even the possibility of large supplies from here later on could not deprive it of its inherent strength. Hence, the firm of W. T. Sargent & Sons, London, under date of April 5, very correctly remarked: "We have again to note the concurrence of excellent deliveries, a diminution of total reserves, and a further decline in market rates. How long such anomalies are to exist it is impossible to say, but with the present low rate of money, there may be an attraction to capitalists to invest largely. Meantime, those who wish to see a further decline predict that it will take place." And simultaneously Messrs. James Lewis & Son, Liverpool, expressed the feeling as follows: "Rumors of large supplies from the United States in the course of the year, and the entire absence of any desire on the part of the general public to invest in this metal—or, in fact, in anything else—notwithstanding the very favorable statistical position, has caused a decline of about 30 shillings per ton in the value of Chili bars during the past month. The demand from the trade has been very good, and deliveries continue exceptionally large. Smelters and manufacturers are full of orders for nearly two months forward, and large quantities of sheets are being taken for India."

The stocks and quantities afloat for England and France on the dates named were as follows:

TABLE SHOWING STOCKS OF COPPER AND QUANTITIES Afloat FOR ENGLAND AND FRANCE.

	1884. March 31. Tons.	1883. March 31. Tons.	1882. March 31. Tons.	1881. March 31. Tons.	1880. March 31. Tons.
Liverpool and Swansea stocks of bars, ores and regulus, reduced to the standard of fine copper....	28,790	27,190	24,269	32,391	33,000
Havre do.....	2,330	2,800	2,779	3,875	4,185
London stock, Australian, English, &c.....	8,551	4,672	8,665	8,979	4,876
Chilian produce afloat, per mail advices.....	7,178	4,782	8,493	8,371	13,187
Chilian produce afloat, per wire advices.....	158	3,500	2,400	830	3,600
Australian produce afloat, per mail advices.....		844	897	1,541	1,912
Total tons.....	59,007	48,238	47,437	56,257	60,760
Price of Chili bars per ton.....	\$28. 17/6	\$24. 15/	\$24. 5/	\$26 1/	\$26

The quantity chartered at West Coast during March was 4000 tons.

From January 1 to March 31 in the respective years the quantities have been as follows:

	1884. Tons.	1883. Tons.	1882. Tons.	1881. Tons.	1880. Tons.	1879. Tons.	1878. Tons.
Estimated fine copper, in round numbers.....	10,000	10,300	8,350	7,300	14,400	11,300	12,500

While the stock and afloats were 36 per cent. lighter, the price was 19 per cent. cheaper than on March 31, 1880; it was, indeed, the lowest point touched during a decade—sufficient to stop production in any but privileged mines. At the same time the supply from Chili was only a mere trifle greater during the first quarter than last year. So strongly situated, the European market was therefore ready for an important rebound the moment an unreasonable panic made room for a due appreciation of the intrinsic soundness of the situation, supported, as it was acknowledged to be, by a large consumption and great ease in money matters, even without the need of aid from operators for a rise. Hence, the favorable reaction came, the improvement being some 8 per cent. in a few days. The present month was subsequently ushered in with a laborious negotiation, in which our manufacturers secured from the same source 12,000,000 pounds for delivery in June, July, August and September at 14 cents.

The presumption is that with some 25,000,000 pounds disposed of abroad and at home the Lake companies will now strive to make up for diminished profits by an enlarged output, and for this at least the Calumet and Hecla will be well prepared, in consequence of increased capacity. While Arizona will at the same time turn out as much as can be done without ruining the producers, there will be but little check on Montana, and the outcome is likely to be in the end that the apprehensions of holders of Copper in Europe will be realized, and that we shall have to ship to that part of the

world in 1884 more than 18,000 tons, unless our manufacturers adopt a policy radically different from the one hitherto pursued, and content themselves with smaller profits, thereby increasing the consumption of their wares at home and enabling exporters to South America to place some of our brass goods there.

Manufacturers cannot certainly complain that they do not get the raw material cheap enough nowadays. If the wages they pay are higher than what their European competitors allow operatives, the markets of tropical America are so near at hand, and there are at present so many shipping opportunities at a low freight rate that it can hardly be a very difficult problem to start an export trade, to stimulate which our merchants are quite ready if they can get the goods cheap enough. As with our enormous copper production, steadily on the increase, an outlet has to be found, and as without a doubt it is ultimately our destiny to become, not only the largest exporters of ingot copper and copper ore, but the greatest exporters of brass goods, the question arises whether we may not as well begin to give this matter our earliest attention, instead of relying on the domestic sales of the goods exclusively in a market which sooner or later will be glutted, when the policy of a large profit at home will have to be abandoned, and we shall be forced into the export trade, after passing through a ruinous period of trying to undersell one another at home.

If the overproduction of copper and its manufactures has the result of developing enterprise, intelligence and energy, it will at least be productive of some permanent good, and prove a greater satisfaction than that of selling to speculators in Europe thousands of tons of our best copper 7 per cent. lower than the price our own manufacturers have to pay for it.

The strike at the Anzin Collieries, France, to which we have before referred, has collapsed. For some time prior to the end of the strike the neighborhood of the mines presented the appearance of a camp rather than a town of colliers. Near the pit-bank of each mine a strong body of soldiers was posted ready to repel any attack upon those who returned to work, while detachments of cavalry scoured the main roads and lanes in the vicinity of the mines to protect the men while going to and from their homes. This display of force, broke the last hope of a successful issue of the strike, and it is now at an end. The refusal of the English trades unions to aid hastened the collapse.

The process of restriction of production at the blast furnaces of Great Britain, as well as reduction of wages at these furnaces and other iron works, still continues in Scotland. On the 1st of April there were 93 furnaces in blast, against 111 the same time last year. Sixteen furnaces have been blown out in the Cleveland district, while the total number of furnaces at work in the United Kingdom on the 1st of March was 488, against 506 on January 1st, and 556 on the 1st of March,

WASHINGTON NEWS.

(From Our Own Correspondent.)

WASHINGTON, D. C., May 6, 1884.

Under instructions of a resolution adopted at a meeting of the Eastern Pig Iron Association, at Philadelphia, on April 25, a careful canvass of the probable vote on the proposed motion to strike out the enacting clause of the Morrison tariff bill was made, with the following result: The total vote of the House of Representatives is 325; total number of Democrats reported for striking out the enacting clause is 46, and the Republicans, 118, making a total of 164. The number of Democrats opposed to striking out the enacting clause is 148; Republicans, 3, making a total of 151. In addition to this number there is a floating vote of Independent Democrats, Nationals and Greenbackers, aggregating 10. Conceding this vote to be cast against striking out would give 161 votes, or a majority of 3 in favor of striking out the enacting clause. The actual vote, which has been fixed for the close of to-day's session, will determine the accuracy of the figures given above.

A SUBSTITUTE PROPOSED.

Representative Converse, of Ohio, who has taken an active part in behalf of the wool industry, has a bill which he will present at the proper time as a substitute or amendment to the Morrison bill, or as an original proposition. The important features of this bill are the restoration of the wool duties of 1867, except as to carpet wools. These and about 20 other articles are to be placed on the free list. It proposes to readjust the duties on metals on the basis of equalization. The tobacco tax is abolished, and manufacturers are to have alcohol free of tax. Manufacturers are allowed a drawback on raw materials equal to the duties, less 10 per cent. Goods imported in American bottoms are allowed a rebate of 10 per cent. The estimated reduction by this bill is about \$40,000,000.

RENEWED ATTEMPTS TO COMPROMISE.

Since the beginning of this controversy there have been repeated efforts on the part of the tariff Democrats to effect an agreement upon which both wings of the party can agree. Mr. Morrison and his friends, however, have been opposed to all concessions. The chief basis of compromise has been the wool tariff. One proposition was the exemption of wool from the operations of the Morrison bill. The reduction under the act of 1883 amounted to 18 per cent., which would then be the total reduction under the present bill, instead of 30 per cent. more. All propositions were declined by Mr. Morrison, in which position he was sustained by Mr. Hurd, of Ohio.

CUSTOMS DECISIONS.

The synopsis of decisions rendered by the Treasury Department during the past week contains the following: "Nipples, plungers and worms, being parts of firearms or accessories thereto, held not to be dutiable under the provision for guns and muskets, Paragraphs 202 and 203, but to be dutiable at 45 per cent. ad valorem, under Paragraph 216." (Letter to Collector of Customs at Chicago, Ill.)

IRON SHOW-CARDS.

The Secretary of the Treasury has given a hearing to manufacturers of metal show-cards in the United States against an appeal from a decision assessing duty at the rate of 45 per cent., the appellants claiming that, if dutiable at all, it would be at 25 per cent. ad valorem under the provision for "printed matter." The department, in affirming the ruling of the Collector at Boston in another case, said: "On the 15th of January, 1880, the department, in an analogous case, decided that certain insurance company's tin signs, imported for the use of an insurance company, were not exempt from duty, but were dutiable at the rate of 35 per cent. ad valorem, as manufactures of tin, it being also incidentally held that the provision for 'all printed matter' above mentioned did not cover signs made of tin or any hard substance not embraced in the 'paper' schedule. Following such ruling, the department rejects the claim of the appellants in both particulars and affirms your decision." It is, therefore, probable that the department will take similar action in the present case.

CORRESPONDENCE ON REBATE ON IMPORTED NAILS.

The application for a rebate on imported nails used in the manufacture of boxes for the export of cans of petroleum has already been mentioned in this correspondence. The following letter from the Assistant Secretary of the Treasury to Mr. C. B. Beach, president of H. Nail Company, Cleveland, Ohio, will explain itself. The letter says: "The department duly received your letter of the 1st inst., asking, in behalf of the wire nail manufacturers of this country, a consideration of the matter respecting the export drawback on imported wire nails used in the manufacture of boxes made from Canada lumber, and used in casing oil put up in tin cans and shipped for exportation. The law allows a drawback of the duties paid, less 10 per cent., on all articles manufactured in the United States wholly from imported materials which may be exported. You make the point that the article which is exported is the oil, and that the article exported is not manufactured wholly of imported materials, and that, therefore, drawback should not be allowed on the materials entering into the manufacture of the boxes. The view taken by you is contrary to that which has been adopted by this department in many cases, and which forms the general rule by which the drawback law has been administered. The same argument would reject the drawback of duties on tin entering into the manufacture of the cans which contain petroleum, and would also reject the drawback on grain bags manufactured in the United States and exported filled with wheat, and in many other articles which form the coverings of domestic merchandise exported. I do not see in the nature of the case sufficient reasons for changing this long-established practice and construction of the drawback law to which you refer, and which is embodied in the inclosed copy of letter to

Messrs. A. R. Whitney & Co., of New York, dated February 8, 1884."

The following is the letter of Assistant-Secretary French to Messrs. A. R. Whitney & Co., of New York, referred to: "I am in receipt of your letter of the 4th inst., in regard to the drawback to be allowed on nails used in the making of boxes from Canada lumber, which boxes are to be exported from the United States. Section 3019 of the Revised Statutes, under which such drawback must be allowed, if at all, provides that there shall be allowed on all articles wholly manufactured of imported material, on which duties have been paid when exported, a drawback equal in amount to the duties paid on such materials, 10 per cent. to be retained for the use of the United States. If the nails are made in the United States out of imported wire, the drawback to be allowed on the nails on exportation would be 90 per cent. of the duty paid on the wire. If the nails are imported in a completely manufactured condition, and are used in the manufacture of boxes, then 90 per cent. of the duties paid on the nails would be allowed. This rule is absolute, and does not admit of modification in the respect mentioned. Nails imported in a completely manufactured condition, and entering into the manufacture of boxes, would be considered as part of the material of the box, and so entitled to drawback without the fact that the nails were completely manufactured when imported."

THE SHIPPING BILL.

There is much probability of the adoption of the provisions of the Shipping Bill requiring a sum of not over \$1 per mile to be paid American vessels carrying the foreign mails, and also requiring contracts for carrying the foreign mails to be made with vessels of American registry.

DEFEAT OF THE MORRISON TARIFF BILL.

Later.—The morning hour having been dispensed with, the House at 11.10 went into Committee of the Whole (Mr. Cox, of New York, in the chair) on the tariff bill. After Mr. Brown, of Pennsylvania, had spoken in support of the protective system, and Mr. Townsend, of Illinois, in favor of the bill, Mr. Randall, of Pennsylvania, took the floor in opposition to the bill. He opened by stating the extreme quickness with which capital invested in large industrial establishments took alarm at adverse criticism, while in common with all other interests it was liable to be called on in taxation to aid in the support of the Government. Congress owed it to itself that nothing like a vindictive policy should be adopted. In the nice adjustment of business affairs there was nothing more conducive to success than stability. If there was stability it was the sure foundation of competence, and, as a natural result, capital and labor moved forward in their respective spheres in content and accord and with mutual profit. To judge from the intemperate language and exaggerated rhetoric which had so frequently marked the debate, it would seem as if those engaged in industrial pursuits were robbers and outlaws. As a matter of fact, they were nothing of the sort. They were a part (and no mean part) of the business of the country, and had been invited under the law to engage in those employments, and, therefore, if for no other reason, they were entitled to the protection of the law. They were part of our resources as a nation, and to develop those resources was a test of true statesmanship. He rejoiced in the growth and prosperity of every section of the country. If the denunciations of the advocates of the bill were believed, the men who had built up our manufactures had committed an unpardonable sin. He could see a good reason why England should think so, but not why such should be the feeling of any citizen of the United States. Great Britain had never ceased to deplore the loss of her American Colonies. She had struck, as she thought, a deadly blow in 1812, and during our late civil war she had done her best to subvert the two sections. Since that time she had changed her policy, and instead of force resorted to persuasion and advice. She eked out the lion's skin with that of the fox. The United States should remember the warning to fear the Greeks even when bringing gifts.

Mr. Blackburn, of Kentucky, felt it necessary to answer some of the arguments advanced by Mr. Randall, and dwelt with much emphasis upon the fact that Mr. Randall had advocated a revision of the tariff in the last Congress and was now opposed to touching it. Mr. Blackburn also paid his attention to Mr. Eaton, of Connecticut, and a spicy colloquy between them ensued. Mr. McAdoo, of New Jersey, made a short but vigorous and attractive speech against the bill, and warned the Democratic leaders against any attempt to lead Irish-American voters to the support of tariff measures which might result in strengthening English influence over the industrial and commercial conditions of the United States. Mr. Findlay, of Maryland, also denounced the bill in strong language. Mr. Kasson closed the debate on the Republican side after yielding five minutes to Mr. Anderson, who explained his position. Mr. Kasson's speech was a masterly effort, and provoked hearty and repeated applause among the opponents of the bill on both sides of the House.

Colonel Morrison closed the debate in the longest and strongest speech he ever delivered in the House. He seemed to feel that his whole political fortune was in peril, and his appeal to his party friends to stand by the bill were piteously eloquent. He vigorously attacked Mr. Randall and his followers, and, turning again and again to his own supporters, he reminded them of their pledges to their constituents, and warned them against the political wrath to come in case they should fail to redeem their promise of tariff reform. Toward the conclusion of his speech he attempted to defend and justify the horizontal features of his bill, but the effort was painfully ineffectual.

Chairman Cox then directed the Clerk to read the first paragraph of the bill, after which Mr. Converse, Democrat, of Ohio, moved to strike out the enacting clause. The vote was taken at 4.25, and resulted in the defeat of the bill by 150 to 151.

It is now proposed to make an effort to readjust the tariff on wool, and it is believed that the same vote can be relied upon in support of this measure.

Rocking Grate-Bar Co.,

45 FRANKLIN STREET,
CHICAGO.

The Southern White Lead Company, of St. Louis, preparatory to making a change in their Grates, very carefully investigated the merits of the Rocking Grate-Bar. Among others, they proposed the following questions to several of those who were already using our Grates:

- "How long have you used the Rocking Grate-Bar?"
- "Do you use slack or lump coal, high or low grade?"
- "Do the Rocking Grate-Bars get out of order easily?"
- "Do clinkers or ashes get between the clips or on the bearings and interfere with their movement?"
- "Can the Bars be kept clean without the use of rakers?"
- "Do the clips burn or require to be replaced often?"
- "Is there improvement in the draught?"
- "Is there saving in fuel? If so, about how much?"
- "On the whole, do you consider the advantages justify the investment?"

These questions were so satisfactorily answered by those who have them in use that the Company have placed their order with us for Rocking Grate-Bars, to go under four boilers, and they are now being fitted up.

Every one who has tested our Grate-Bars has been satisfied with their performance. Our customers are our references without an exception.

Write for Descriptive Circular and list of parties using these Grates.

We guarantee "the Best Fires from the Worst Coal, and absolutely no cleaning."

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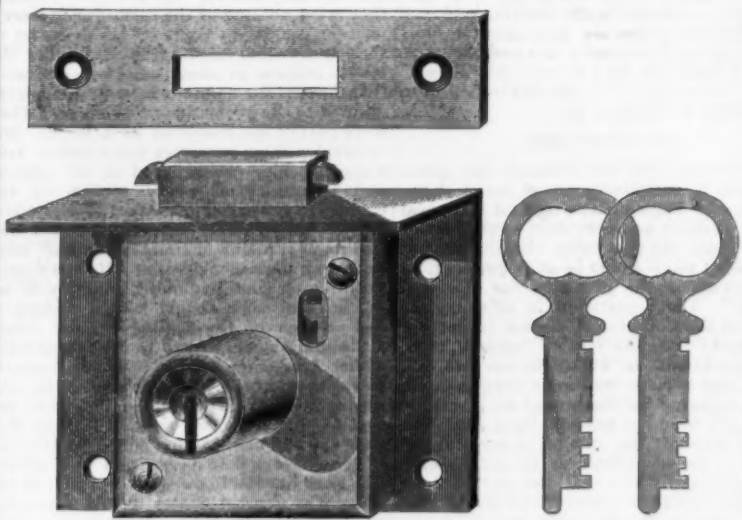
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The only Adjustable Soldering Iron combining perfect utility and simplicity of construction. Having no weak or complicated parts, it will outlast any other iron in the market. It has been subjected to the severest tests, and in every case has given perfect satisfaction.

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These Coppers are detachable, and when worn out, or a change is necessary, can be removed from the handle and another substituted. For sale by all jobbers handling this class of goods, at factory prices.

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Only double ring ever invented. The only ring that will effectively keep Hogs from rooting. No sharp points in the ring.

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Only single ring in the market that closes on the outside of the nose. No sharp point in the nose to keep it sure.

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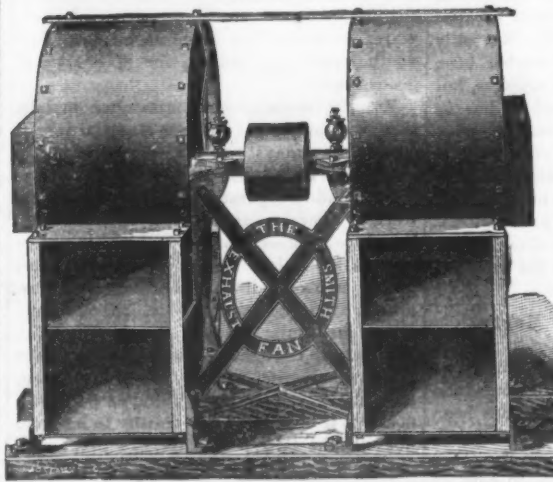
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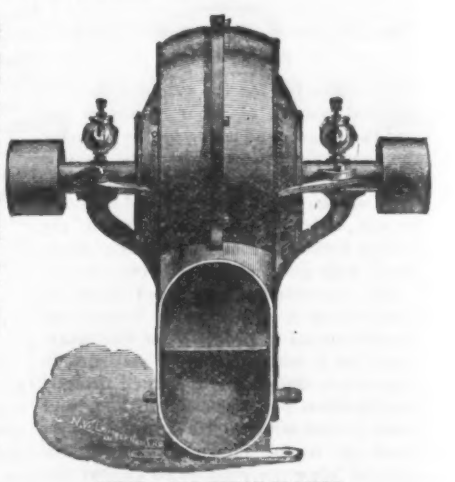
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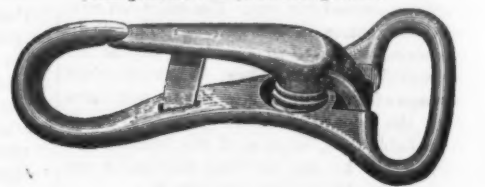
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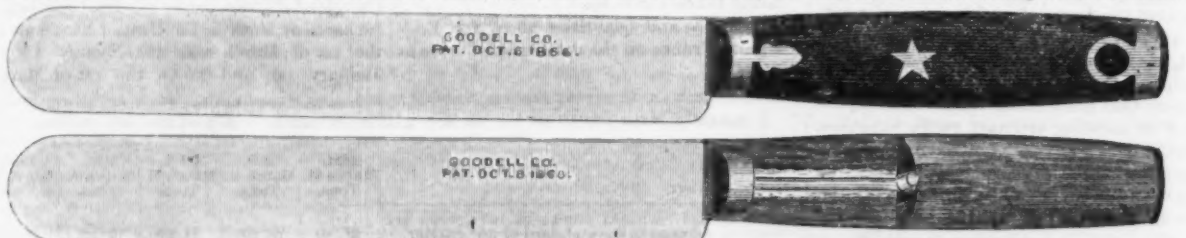
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Penfield Block Co., Lockport, N. Y.	14	Morrill Iron, 38 First St., Brooklyn	46	Crating, Iron.	3	Chadbourne & Coldwell Mfg. Co., New	34	Steele & Co., 50 Broadway, N. Y.	40	Rowland Wm. & Harvey, Frankford	48
Bolt Feeders.	48	William Rose & Bros., West Phila., Pa.	7	Crating, Iron.	3	Chadbourne & Coldwell Mfg. Co., New	34	Steele & Co., 50 Broadway, N. Y.	40	Rowland Wm. & Harvey, Frankford	48
The Miller Co., Canton, O.	45	Drop Hammers.	26	Crating, Iron.	3	Chadbourne & Coldwell Mfg. Co., New	34	Steele & Co., 50 Broadway, N. Y.	40	Rowland Wm. & Harvey, Frankford	48
Rollers, Steam.	48	Williams, White & Co., Moline, Ill.	26	Crating, Iron.	3	Chadbourne & Coldwell Mfg. Co., New	34	Steele & Co., 50 Broadway, N. Y.	40	Rowland Wm. & Harvey, Frankford	48
Babcock & Wilcox Co., 30 Cortlandt, N. Y.	36	Leaves, Trough Hangers.	44	Crating, Iron.	3	Chadbourne & Coldwell Mfg. Co., New	34	Steele & Co., 50 Broadway, N. Y.	40	Rowland Wm. & Harvey, Frankford	48
Eagle Moor Iron Co., 79 Liberty, N. Y.	45	Heartley Geo. W., Toledo, O.	44	Crating, Iron.	3	Chadbourne & Coldwell Mfg. Co., New	34	Steele & Co., 50 Broadway, N. Y.	40	Rowland Wm. & Harvey, Frankford	48
Marrison Boiler Works, Philadelphia	46	Edge Tools, Makers of.	45	Crating, Iron.	3	Chadbourne & Coldwell Mfg. Co., New	34	Steele & Co., 50 Broadway, N. Y.	40	Rowland Wm. & Harvey, Frankford	48
Boiler Plates.	48	Doscher M., 85 Chambers, N. Y.	45	Crating, Iron.	3	Chadbourne & Coldwell Mfg. Co., New	34	Steele & Co., 50 Broadway, N. Y.	40	Rowland Wm. & Harvey, Frankford	48
Wm. McIlvain & Sons, Reading, Pa											

Trade Report.

Philadelphia.

Office of The Iron Age, 230 South Fourth St.,
Philadelphia, May 6, 1884.

Pig Iron.—The market remains in a very dull condition, and while indications of improvement are seen once in a while, the general outcome is not satisfactory. In comparing the condition of the market to-day with what it was a week ago, it is difficult to see any change at all, either for better or worse, while the general surroundings remain just about as they were at that time. There is nothing in the outlook to warrant very sanguine expectations in regard to the summer trade, neither is there any reason to suppose that it will be much different to the average of the past four months. Choice Foundry Irons are scarce and may stiffen up a little, but other grades are dull and irregular, with somewhat of a tendency to slightly lower figures. The position is extremely sensitive, however, and in a condition to respond very quickly to influences either favorable or unfavorable. The supply of the best grades of No. 1 Iron being very light, for instance, any increase of demand would probably cause such a scarcity as to advance prices, while any decrease would just as quickly affect such grades as are already in excess of requirements. Hence the futility of making predictions when the conditions are liable to vary almost at any moment. The chances, however, seem to be that there will be no important changes at present, and in that belief both buyers and sellers are trading from hand to mouth, and taking no risks beyond the next 10 or 12 weeks. At the same time, there are some low grades of Iron on the market which holders are anxious to realize upon, and for these low figure would be accepted. As mentioned last week, there is a tendency to increase the supply of this class of Iron under the mistaken idea that buyers will take it because it can be offered at low prices. On the contrary, there are increasing evidences of a more critical selection of qualities, and, while low quotations may unsettle the market, the article will not find permanent buyers unless the quality is something that can be depended upon. Prices remain about as quoted a week ago, say, \$20 @ \$20.50 for No. 1 Foundry, \$18.50 @ \$19 for No. 2, and \$18 @ \$19 for Mill Irons, all delivered at tide. Buyers of large lots expect to shade these prices a trifle, and in exceptional instances it is probable that they have succeeded in doing so. A sale of 8000 tons of Cornwall Red-Short Iron was sold to one of the rail mills in Scranton, price understood to be about \$18, delivered.

Foreign Iron.—Bessemer is offered for shipment to New York at \$20, and on firm offers could doubtless be had at less, but consumers are very cautious in making bids. A 1000-ton lot 20% Spiegel was sold at \$28, New York, and prices steady at \$28 bid for 1000-ton lots.

Muck Bars.—The demand is very slow, and while prices are nominally unchanged, it is probable that considerable shading would be necessary to effect sales. Asking prices are from \$31 to \$32 at mill, according to circumstances.

Blooms.—The market continues dull and prices varying. The best brands are pretty firmly held at quoted rates, but concessions from \$1 to \$2 are frequently heard of. We quote as follows: Charcoal Blooms, \$55 @ \$56; Run-out Anthracite, \$45 @ \$46; Scrap Blooms, \$41 @ \$42; Northern Ore Blooms, \$39 @ \$41.

Bar Iron.—The demand continues to be very slow and unsatisfactory, although there is a slightly stronger feeling among manufacturers, who believe there is some probability of a considerable reduction in the output during the summer months. Absolutely bottom prices are believed to have been reached for the best qualities of Finished Iron, so that if buyers do not come forward sellers see no use in pushing matters further. It is satisfactory, therefore, to learn that there is a solid foundation to build on, although it may be some time yet before any actual improvement is realized. In the meantime prices will be held with a fair degree of firmness at from 1.75¢ to 1.85¢ for medium qualities, and 1.9¢ @ 2¢ for the best Refined.

Plate and Tank Iron.—There is no change worth mentioning, the demand being slow and considerably less than the current output. Prices are steady, however, and with any material increase in the demand, which can hardly be long delayed, it should not occasion surprise to see somewhat higher figures. In the meantime quotations are as follows: Boat Plate and Tank Iron, 2.2¢ @ 2.25¢; Shell, 2.75¢ @ 2.85¢; Flange, 3.75¢ @ 3.85¢; Fire-Box, 4.75¢.

Structural Iron.—The general feeling is one of quietude, although there is a moderate amount of business taken from week to week. Several large contracts which have been on the market for some time were expected to be closed before now, but for some reason or other delays have occurred, and the contracts are still unsigned. The outlook is fairly encouraging, however, and there is no reason to suppose that there will be any material change from the present condition of things. Prices remain as last quoted, viz.: Angles, 2.2¢ @ 2.25¢; Bridge Plates, 2.25¢; T's, 2.75¢; Beams and Channels, 3.5¢, less the usual discount on large orders.

Sheet Iron.—The demand for Thin Sheets continues active, and some manufacturers have sold their product for the entire year; others are inclined to hold off in expectation of better figures. Sheet Iron of indifferent quality is freely offered, which, though not taken to any great extent, gives the market an irregular appearance. Prices for first-quality Sheet Iron are about as follows:

Best Refined, Nos. 26, 27 and 28.....	4 ¢
Best Refined, Nos. 18 to 25.....	3 1/2 ¢
Common, 1/4¢ less than the above.....	
Best Bloom Sheets, Nos. 26 to 28.....	6 1/2 ¢
Best Bloom Sheets, Nos. 16 to 21.....	5 1/2 ¢
Common Red Plates, 8-16 to 16.....	2 1/2 ¢
Blue Annealed.....	2 1/4 ¢
Second quality, discount.....	50 %
Common, discount.....	57 1/2 %

P. S.—In this connection it may be stated that Messrs. Alan Wood & Co. are now prepared to furnish Light Plates and Sheets made from Steel.

Wrought Iron Pipe.—There is some slight improvement in demand to be noted this week, and the amount of inquiry shows some increase. As far as the manufacturers are concerned, prices are firmly adhered to, but there is evidently some shading done by dealers in consequence of the agency system which was introduced with the new combination, but lately abolished. We quote as follows: Butt-Welded Black Pipe, 27 1/2 @ 30 %; Butt-Welded Galvanized, 17 1/2 @ 20 %; Lap-Welded Black, 47 1/2 @ 50 %; Galvanized, 32 1/2 @ 35 %; Boiler Tubes, 47 1/2 %.

Steel Rails.—There is quite an active demand for deliveries extending to about August, and for such prices are firm at from \$33 to \$33.50, and orders hard to place. For later deliveries there is considerable anxiety to secure business, but buyers seem to be quite indifferent and not at all disposed to make firm offers. For winter work in good-sized lots it is probable that prices could be shaded a little, although \$33 is the nominal quotation.

Crop Ends.—There is more disposition to do business, and while the best makes are held at about \$21.50, there are others offering all the way down to \$20. The demand is chiefly for best qualities, sales of which are reported at \$21 @ \$21.50.

Old Rails.—Small lots are tolerably active at about \$22.50 and upward. Large lots move slowly. A sale of a few hundred tons at \$21.50, Philadelphia, was reported yesterday. Generally speaking, the market is in a very disturbed condition, and it is extremely difficult to give exact quotations, as much depends on size of lots, quality, &c.

Nails.—No change whatever in Nails. The demand for small lots is good, and prices tolerably firm as last quoted, viz.: \$2.50 @ \$2.60, according to size of lot.

We have received the following circular: The copartnership of Clark, Reeves & Co. having been dissolved by the mutual consent of its members, a copartnership under the name of the Phoenix Bridge Company has been formed for the purpose of carrying on the business heretofore conducted by that firm. The principal officers of this company are the following members of the late firm of Clark, Reeves & Co.: Adolphus Bonzano, David Reeves and William H. Reeves, aided by the same corps of engineers and assistants.

The engineering office, shops and works will be, as heretofore, at Phoenixville, Pa., where are located the extensive works of the Phoenix Iron Company, constituting, in connection with this company, the largest and most complete establishment in the country for the manufacture of bridges and all kind of structures of iron and steel. Among the productions of these works, we have the honor to invite your attention to the Kinzua Viaduct of the Erie Railway, the design of Adolphus Bonzano, the elevated railways in Eighth, Ninth and Second Avenues, in the City of New York, the bridges for the West Shore Railway, and to the numerous structures erected for most of the principal railroads in the United States and Canada, comprising about 60 miles of bridge spans, all of which have been constructed by us during the past 15 years.

We call particular attention to the fact that our bridges and other structures are made of materials wholly manufactured on the premises, from the ore to their completed condition ready for erection. You may thus rely with absolute confidence upon our assurance that the reputation of the Phoenixville Bridge Works will be fully maintained, as well for quality of material and workmanship as for prompt and faithful execution of contracts. We are fully prepared to make and submit designs for and to manufacture and erect complete, bridges, viaducts, roofs, piers, towers, elevated railroads and all kinds of structural work in iron and steel. For estimates, plans and tenders address the Phoenix Bridge Company, 410 Walnut street, Philadelphia.

Pittsburgh.

Office of The Iron Age, 77 Fourth Avenue,
Pittsburgh, Pa., May 6, 1884.

There has been no important change in the general Iron situation since our last report. Inquiry demonstrates that the demand is light for the season and prices unsatisfactory. The wage question is attracting more attention just now than anything else; the hitch between the mill-owners and the ironworkers has not yet been adjusted, and the prospects, we regret to state, for an amicable settlement are not very promising. Mill-owners say that unless the workers submit to the proposed reduction a lockout is inevitable; that they cannot, in the present depressed condition of the Iron trade, renew the scale now in force, and while they would prefer to keep their mills in operation, they have arrived at the conclusion that it is better to shut down than to run them at a loss. The ironworkers, on the other hand, appear to be impressed with the belief that the mill-owners are playing a game of bluff, and that at the last moment they will accept the terms proposed by the Amalgamated Association. Thus the matter stands at present, and what will result is one of those things past finding out. The indications at the moment point to a shut-down on the 1st of June, as both parties appear determined, although there is still a possibility that the matter may be brought to an amicable settlement.

Ore.—The latest advices from the Lake Ore region report no change in the situation there; the demand, of course, has fallen, as compared with what it was a month or six weeks ago, but some companies are pretty well sold ahead.

Pig Iron.—There is still a fair movement in Pig Iron, and, notwithstanding the demand is still of a hand-to-mouth character, we can report a fair volume of business in the aggregate. Consumers, as might be expected in view of the very unsatisfactory condition of the products, as well as the possibility of a lockout on June 1, are buying very sparingly, ordering from day to day as their immediate necessities require, and this policy will no doubt be closely adhered to until the wage issue has been decided. No sooner is an order placed for a small lot—say, 50 to 100 tons—than immediate delivery is required; mill-owners allow stocks to run clear down before they will buy; hence, delivery is demanded at once. Prices continue weak, but remain about as last quoted; some furnaces refuse to accept inside quotation, but consumers have no trouble in obtaining all they need within the range of our quotations. Production continues light, and there is little or no accumulation in first hands; furnaces in blast are nearly all working on former contracts. We quote prices as follows:

Foundry Grades.....	\$18.00 @ \$20.00, 4 mos.
Neutral Mill Iron.....	17.00 @ 17.50, 4 "
All-Ore Mill Iron.....	18.50 @ 19.00, 4 "
Red Short, Cinder Machine.....	18.00 @ 18.25, 4 "
Silvery Iron.....	17.50 @ 18.00, 4 "
Warm-Blast Charcoal.....	22.00 @ 24.00, 4 "
Cold Blast Charcoal.....	20.00 @ 22.00, 4 "
Bessemer Iron.....	20.50 @ 21.00, 4 "

There is a rumor on the street of a sale of 1200 tons Mill Iron at \$16, cash, but it lacks confirmation; it is safe, however, to say that no first-class Neutral Iron could be bought at that price. Bessemer Iron—that is, for round lots—we are assured, cannot now be bought under \$20, cash, although there was a sale some time since at \$19.50, cash. Best brands of Neutral Mill may be quoted firm at \$17, cash, and \$17.50, four months.

Muck Bar.—There have been no sales reported during the week, in the absence of which we continue to quote at \$31, cash, although it is possible that it could be bought at \$31, four months.

Manufactured Iron.—Trade does not improve, although there is a possibility, in view of the very light trade all spring, that it may be better than usual through the summer. Manufacturers generally are in pretty good condition for a lockout, having a pretty well-assorted stock, and a shut-down for a couple of months would enable them to realize better prices. Even if a lockout should be avoided, it is probable some of the mills will shut down for a time during the summer unless business should improve materially in the meantime. We continue to quote prices on a basis of 1.75¢ @ 1.85¢ @ 1.9¢ for Bars, according to size and character of order, as well as time of delivery.

Nails.—The Nail trade continues backward for the season, but an increased demand is only a question of time, as the consumption is large and stocks in hands of jobbers light. The latter have been holding off all spring, in apprehension of lower prices, and once they become satisfied that hard pan has been reached we look for a largely increased demand. The pooling project has not yet been consummated. We continue to quote carload lots and upward at \$2.30, 60 days, 2 % off for cash, and 5¢ @ 10¢ per keg additional in a jobbing way.

Wrought Iron Pipe.—The demand continues light, unusually so for the season, but it is hoped that there will be a change for the better later on in the season. Prices remain unchanged. Discount on Black Butt-Welded Pipe, in car lots and upward, 30 %; less than carload, 27 1/2 %; on Galvanized do., 20 % and 17 1/2 % respectively. On Black Lap-Welded Pipe, car lots, 50 %; less than car lots, 47 1/2 %; Galvanized do., 35 % and 32 1/2 %; Selected Pipe or Pipe cut to specified lengths, the discount is 5 % less.

Steel.—There is a very fair business, particularly in the lower grades, but prices are irregular and unsatisfactory. Best quality of Refined Cast Steel, 9 1/2 ¢; do. Crucible Machinery, 5¢; Open Hearth and Bessemer do., 3 1/4 @ 3 1/2 ¢.

Steel Rails.—So far as known, there have been no sales made here under \$35, cash, at mill. Makers here are pretty well sold ahead, and at better prices than the one quoted. There is considerable inquiry, and a good many orders could be placed at \$32 @ \$33, and buyers are holding back in expectation of being able to buy at prices last quoted later on in the season.

Old Rails.—There has been a break in this market at last; we are reported a sale of 1500 tons of Standard Rails at \$22.75, and more are being offered at same price.

Railway Track Supplies.—Continue dull, but prices remain nominally unchanged. Railway Spikes are still quoted at 2 1/2 ¢, 30 days, here, and less at points in the West;

Splice Bars, 1.75¢ @ 1.85¢; Track Bolts, 2 1/4 ¢ @ 3¢.

Crop Ends.—Steel Rail Ends are quoted at \$20.50 @ \$21, and Bloom Ends at \$20 @ \$20.50. Sale, 1100 tons foreign Crop Ends at \$24.75, delivered in Pittsburgh.

Scrap.—The dullness noted for some weeks past continues, and there is so little doing that it is difficult to give accurate quotations. No. 1 Wrought, \$20 @ \$21, net ton; Old Car Axles, \$29 @ \$30; Cast Borings, \$12.50 @ \$13.50, gross ton; Old Wheels reported scarce and firmer, but there does not appear to be much inquiry for them. We continue to quote at \$18 @ \$19, gross.

Window Glass.—There is an increasing business, and the indications are favorable for a good summer trade. Prices steady; Discounts for carload lots, 60 and 20 % on Single and 70 and 5 % on Double Strength.

Coke.—Blast Furnace Coke remains unchanged at \$1.10 per ton, delivered free on cars at ovens; business only fair.

Coal.—The river continues too low for the shipment of Coal South, and, with source of supply cut off for several weeks, the markets below have commenced to stiffen.

Chicago.

Office of The Iron Age, 36 and 38 Clark St.,
Cor. Lake St., Chicago, May 5, 1884.

Hardware.—In reviewing the Hardware market of the past week we find the situation substantially the same as a week ago. Although jobbers are doing a fair amount of business, there is not the activity in the trade that indicates a particularly flourishing condition. Demand has settled upon consumption as a basis, and no orders of importance are placed in anticipation. Another feature that has been holding in check some portions of the trade that has in former years come into the market earlier is the refusal of jobbers to date bills ahead on goods that are not especially saleable at the time of shipment. Various reasons are assigned for this action, the prominent one being the fluctuation in price between the time of sale and the maturity of the bill, which frequently leads to dissatisfaction and loss. The effect will be to extend the sale of these goods to a later date, leaving less unsold stock in the hands of the retailer and more promptly paid bills. Sales are pretty well distributed among all classes of goods, while prices are noted as steady, with poor prospects of an advance except on a few specialties. Among these are Barb Wire, which is in good request and held firm at 6¢ @ 6 1/4 ¢ for Galvanized, Two and Four Point, Painted 1¢ less per lb, upon which price manufacturers have within the past week endeavored to raise another 1/4 ¢ per lb. The movement was opposed by the more conservative, for fear of inviting new competition, and the price was allowed to stand for the present.

Nails.—The demand for Nails continues to improve slowly and apparently only as consumption warrants. There is no disposition to speculate on the part of jobbers, and their stocks are kept at the lowest point that will meet their retail demand. In a small jobbing way \$2.50 @ \$2.55 is quoted, while carload lots are held at \$2.45 as the lowest figures that will be accepted. There is no indication that prices will advance unless the season should favor an extraordinary demand, which from scarcity of stock might to some extent strengthen quotations that are at this writing weak and feverish.

Ore.—There is nothing new to add to the position of the Ore market as noted last week. Quotations are made from \$6 to \$6.50, the latter figure being the Republic Company's price on dock at Cleveland. Some talk of scarcity in the latter part of the year is current, but the foundation for such rumor is supposed to be the desire on the part of Ore companies to effect sales at present prices.

American Pig Iron.—During the past week the Pig Iron market has shown no signs of improvement. A general feeling prevails that the market is in a fair, healthy condition, with a steady demand for small lots from direct consumption. There is little or no prospect of this condition changing during the next two months. As is customary at the first of the month, a few more inquiries over the previous week are reported. With nothing in the scale of prices to induce purchasers to load themselves with large stocks, furnaces are confining their energies to the small trade, and making the most of their opportunities. While stocks of Lake Superior Charcoal Irons are reported very low, there has not as yet been any difficulty in meeting the demand at the following quotations, four months, for carload lots: Lake Superior Charcoal, Nos. 1, 2 and 3, at \$21.75 @ \$22.50; Nos. 4, 5, and 6 at \$23; Lake Superior Coke at \$21; Lake Superior and Ohio, mixed, at \$21; Ohio Standard Black Band, No. 1, \$21 @ \$22; Southern, No. 1, at \$20, and No. 2 at \$19; Silvery Soft at \$19 @ \$21; Anthracite, No. 1, at \$22, and No. 2 at \$21.

Scotch Pig.—Buyers of Scotch Pig are indifferent, and the market continues without interest. Summerlee is quoted at \$26, cash—50¢ off of former price. Holders of Glenarnock are quoting \$27, regular, though an offer at considerably less in cash would stand a fair chance of acceptance.

Merchant Steel.—The Steel market continues weak and demand light. The best brands of "known" Steels are in better condition than the lower grades and command the price quoted. There are special makes that are held above our quotations,

both for regular and extras, but not representing the majority of trade. We take the high grades, embracing nearly all the standard manufactures, as a basis, and make the following quotations for the Best Refined grades:

	Per pound.
Best Refined Cast Tool Steel.....	9 1/4 @ 10¢
Crucible Cast Machinery Steel.....	6 1/4 @ 6 1/2 ¢
Open-Hearth Machinery Steel.....	3 1/4 @ 3 1/2 ¢
Bessemer Machinery Steel.....	3 1/4 @ 3 1/2 ¢
Open-Hearth Spring Steel.....	3 1/4 @ 3 1/2 ¢
Too-Calk Steel.....	3 1/4 @ 3 1/2 ¢
Bessemer Steel.....	2 1/4 @ 3 ¢
Cast Flow Steel.....	4 1/4 @ 4 1/2 ¢
German Flow Steel.....	3 1/4 @ 3 1/2 ¢
Syndeate Steel.....	3 1/4 @ 3 1/2 ¢
Fire-Box and Boiler Steel.....	3 1/4 @ 3 1/2 ¢

Steel Rails.—There are buyers in the market for small lots to be delivered during the latter part of the summer, but prices asked and offered are so wide apart that there is little change of doing business. Rolling mills persist in their demand of \$37 per ton as an asking price, and unless they receive an offer of at least \$35 they are unwilling to open negotiations for new trade.

Old Rails.—The call for Old Rails is less urgent than a week ago. Sellers are holding at \$22, without transactions. Mills quote \$20 @ \$21, Chicago or Milwaukee, in trade or cash, and meet their requirements at these figures.

Bar Iron.—In speaking of the Bar-Iron trade in this market it is necessary to pay strict attention to the quality of Iron. The remarks on "New Puddled" Iron do not apply to "Common," or that class of Iron manufactured from Old Rails, and would be misleading if applied to the latter. Those who handle nothing but the "New Puddled" Iron are having an excellent trade in large and small shipments, both for city and country delivery. The recent reduction of 1¢ has brought the price so near the figures of Common Iron that the trade in this class has been dull and very unsatisfactory, because all users of Iron can purchase the best in the market for 1¢ @ 1 1/2 ¢ more than he must pay for Old-Rail Iron. Therefore it is plain why one man is full of orders while his neighbor is comparatively idle. For Best Refined "New Puddled" we quote 1.9¢ @ 2¢ to the average trade, and a concession of 1¢ on orders of special inducement. Common Iron is quoted firm at mill at \$1.60 @ \$1.70, and \$1.80 from store.

Norway Bars.—The demand for Norway and Swedish Irons has been quite fair during the last week. Prices are ruling firm at 4¢ rates in a retail way and \$3.90 to the Merchant jobbing trade.

Structural Iron.—The demand for this class of Iron falls short of anticipations up to this writing. Contracts for large buildings have been in course of negotiation for some time that have not yet been consummated, when it was contemplated a month ago that they would be well under construction by the first of May. In the meantime considerable unexpected trade from the surrounding country has sprung up, and a fair business is being done from store stock, together with current orders on contract, making a reasonably good market for the season. The following quotations are from mill and subject to discount as per association schedule on large orders. From store stock 1/4 ¢ @ 1/2 ¢ is added on these prices: Beams, \$3.60; Channels, \$3.60; T Iron, \$3; Angle Iron, \$2.50; Flitch Plates, \$2.50; Frieze Plates, \$2.70.

Galvanized Iron.—The manufacturers of Galvanized Sheets having at length become disgusted with the course pursued during the last six or more months, in attempting to drive each other out of the market by cutting prices, came to an understanding last week and made the uniform price on Juniata 55 % off, and on Refined 55 and 10 % off, to stand one month, and to be continued thereafter if satisfactory. While these are our exact quotations of last week, it is nevertheless regarded as an advance of from 2 1/2 to 5 % on the former price, as concessions were made to this extent in the interest of competition, and are now given as bottom prices to the best trade. In a jobbing way 50 and 2 % off on the former and 50 and 5 % off on the latter is quoted. The demand has improved some during the week, and the Cornice interest promises to still further increase trade within the next two weeks.

Black Sheets.—Our remarks on Black Sheet last week will apply as well to the present. There is no prospect of anything better. It appears to be in as bad a way as it can possibly be and remain in existence. Nobody wants any; nobody sells any, and nobody knows enough about to make a reasonably fair quotation. We give the following as nominal: Nos. 10 to 14 at \$2.60 @ \$2.70; No. 24 at \$3.20; Nos. 25 and 26 at \$3.30, and No. 27 at \$3.40.

Old Car Wheels.—Old Wheels are in fair demand, but less firm in the hands of brokers than a week ago. Foundries are offering from \$18.50 to \$19, and holders ask from \$19.50 to \$21, according to location, quality and their respective opinions regarding the market.

Scrap Iron.—The abundance of Scrap that has flooded the market since fine weather began has eased up the market, and prices have accordingly been on the decline, and grading closely watched. Mills are quoting about \$17 @ \$18 for Chicago or Milwaukee delivery. We make the following quotations as dealers' purchasing prices: No. 1 Wrought Scrap, 1¢ net ton, \$16.50; Cast Scrap, 1¢ net ton, \$14; No. 1 Stove Plate Scrap, 1¢ net ton, \$9; Wrought Turnings, 1¢ ton, \$8; Cast-Iron Borings, \$7;

Old Plow Steel, \$9; Tool Steel, \$10; Pig Iron, \$18; Steel Tire, \$10; Pig Lead, \$15; Buggy Springs, \$10; Pig Iron, \$17; Malleable Scrap, \$5.

EVERETT & POST, 156 Lake street, Chicago, report to us as follows, under date of May 3, 1884: *Pig Lead*.—The past week has seen lower values in Pig Lead, prices settling down to \$3.45, although very little can be sold here at that. The transactions for the week sum up about 900 tons at prices ranging around \$3.50 @ \$3.45. Just what will be the course of the Lead market in the near future is hard to tell, but certainly the present prices are near the cost of production, if not below.

Chattanooga.

Office of *The Iron Age*, Carter and Ninth Sts., CHATTANOOGA, May 5, 1884.

Southern commercial business has shown no marked feature during the past week. Some financial relief will come to the Tennessee and Lower Mississippi Valleys in the next two or three weeks through returns on heavy shipments of berries and early fruits. The crops are generally fair, and in some localities large. The movement of lumber from Southern to Eastern points continues active, and the prospects of a heavy trade during the summer are excellent. There is still some agitation for readjustment of general freight rates in the South on goods going to and coming from the Eastern seaboard. Rates to and from Northern and Northwestern points have been generally satisfactory for some years, this being especially the case with shipments of Iron, lumber and coarse cotton goods from Southern markets to the Northern and Western cities. The industrial situation in the South continues in fair condition.

Pig Iron.—The market presents no points of special interest. Stocks of high-grade Irons continue light, the filling of yearly contracts and current sales keeping furnace yards comparatively bare of good Foundry and Mill grades. Mill Iron continues at \$14.70 @ \$15 for near-by delivery; No. 1 Foundry, \$17. We quote small lots, 60 days: No. 1 Foundry, \$18 @ \$19; No. 2 Foundry, \$17 @ \$18; Gray Forge, \$16 @ \$17; White and Mottled, \$14 @ \$15; Car Wheel Metal, \$23 @ \$24.

Ores.—We quote Fossilliferous Ores, averaging about 50% Metallic Iron, \$1.50 @ \$1.75 delivered at river landings; higher qualities, \$1.75. Brown Hematite, \$1.75 @ \$2 on cars at furnace.

Miscellaneous Articles.—Old Rails are not in very full supply and are fairly firm at \$21; Wrought and Scrap dull at \$14 @ \$16 for choice lots; Old Wheels nominal, \$18 @ \$20.

Nails.—The Nail market is steady at \$2.50 special terms to large buyers shaded about 10¢ by Northern mills. Job lots 10¢ @ 15¢ higher.

Merchant Iron.—Lookout Mill, Chattanooga, has closed indefinitely. The reasons given by the manager are: A decision of the Chancery Court that the executors of Hozelbert, late chief owner of the stock, must sell the stock and cannot run the mill under the terms of the will; and the high rates of labor fixed by the Amalgamated Association. This will materially shorten Southern production of Bar and Spikes during the summer. We quote Bar dull at \$1.85 for round assorted lots; Bolts, \$2.80 @ \$3 for Square and Hexagon Heads; Spikes, \$2.35; Splices, \$1.85.

Coal.—We quote Fancy Lump at \$3; Common, \$2.50; run of mine to manufacturers, \$1.50 @ \$1.75 at mills.

Coke.—We quote at \$2 @ \$2.20 at furnace; Foundry Coke at \$2 @ \$2.20 bushel.

Barbed Wire.—Four-Point Galvanized, 6¢ @ 7¢; Cambria Link, 6¢ @ 7¢.

St. Louis.

HOPPER & CO., Pig Iron and Iron Ore Merchants, 315 Olive street, report to us as follows, under date of May 3, 1884: The market, if anything, is weaker than at the time of our last report. We, however, continue our quotations of last week. We quote:

HOT BLAST CHARCOAL IRONS.
Missouri..... \$19.00 @ 20.00
Southern..... 20.00 @ 22.00
Ohio..... 24.00 @ 26.00

COAL AND COKE IRONS.
Missouri..... 19.00 @ 20.00
Southern..... 18.50 @ 19.50
Ohio..... 21.00 @ 22.00

MILL IRONS.
Red-short..... 17.50 @ 18.50
Neutral..... 17.00 @ 18.00

CAR WHEEL AND MALLEABLE IRONS.
Missouri..... 19.50 @ 21.00
Southern..... 20.00 @ 22.00
Ohio..... 23.00 @ 24.00

Louisville.

W. B. BELLEF & CO., Iron and Steel Merchants, Nos. 115 to 121 West Main street, Louisville, under date of May 3, report as follows: *Bar Iron* is certainly dull. Threats of June troubles have fallen flat on the untroubled buyer, and his orders come in slowly and as unimportant as ever. The proverbial May dullness began in April—the only evidence of forwardness in an otherwise very backward season. The usual rally for the spring trade did not put in its appearance at all. We shall drift along in an apathetic way till the bottom drops out or some effort materializes to reduce production. *Hoops and Bands* are being cut down to force sales. Buyers are few, and a carload is as eagerly sought after as 100 tons formerly. *Sheet*.—The confidence that was induced by the more precedent of advances later in the season seems to have been shaken, and the whole lots are offered excep-

tionally low, there are no eager takers. The advance by concerted action of the Galvanizers is a trifle encouraging. *Nails*.—There has been a lull in the demand for Nails, which two weeks ago was brisk. There is no more talk of a pool, and the postponement of its consideration till next meeting means, we think, a final abandonment of the scheme. *Wire*.—The strength of this one article in the list seems to know no diminution. Barbed Wire is scarce and immediate delivery almost out of the question. The scarcity so general and the advance so well maintained has been a surprise both to the trade and the country buyers. The country at large owes surely a debt of gratitude to an invention which is doing so much to save its valuable timber.

General depression in all branches of trade is unmistakable and undeniable. Iron has not shrunk so much as many of the leading securities on the stock list. First mortgage bonds that a year or two ago brought par are now begging at 50¢. Our Louisville and Nashville—now most economically managed and prospering in all its branches—is quoted for its stock about 46.

Baltimore.

R. C. HOFFMAN & CO., Pig and Railroad Iron Merchants, No. 21 South Frederick street, write as follows, under date of May 5, 1884: In our market the demand for Pig Iron has been rather quiet, and sales only moderate at former prices, viz.:

Baltimore Charcoal Wheel Iron (all)
Baltimore Ore..... \$28.00 @ 29.00
Virginia C. B. Wheel Iron..... 28.00 @ 29.00
Anthracite, No. 1..... 28.00 @ 29.00
" No. 2..... 28.00 @ 29.00
" No. 3..... 18.00 @ 20.00
" Mottled and White..... 14.00 @ 15.00

W. N. WYETH, Iron and Steel Merchant, 46 and 48 South Charles street, reports us the following, under date of May 5, 1884: We have to report improvement in trade circles for the past week, the volume of business done being satisfactory, but margins remaining close and at about cost of production. Values continue notably unchanged:

Ref. Bar Iron, 1 to 6 x 3/4 to 1, 1/2 @ 1.90 @ 2.00
" 3/4 to 1, 1/2 @ 1.90 @ 2.00
" 1/2 to 3/4 @ 1.80 @ 1.90
" 1/4 to 1/2 @ 1.70 @ 1.80
" 1/8 to 1/4 @ 1.60 @ 1.70
" 1/16 to 1/8 @ 1.50 @ 1.60
" 1/32 to 1/16 @ 1.40 @ 1.50
" 1/64 to 1/32 @ 1.30 @ 1.40
" 1/128 to 1/64 @ 1.20 @ 1.30
" 1/256 to 1/128 @ 1.10 @ 1.20
" 1/512 to 1/256 @ 1.00 @ 1.10
" 1/1024 to 1/512 @ .90 @ 1.00
" 1/2048 to 1/1024 @ .80 @ .90
" 1/4096 to 1/2048 @ .70 @ .80
" 1/8192 to 1/4096 @ .60 @ .70
" 1/16384 to 1/8192 @ .50 @ .60
" 1/32768 to 1/16384 @ .40 @ .50
" 1/65536 to 1/32768 @ .30 @ .40
" 1/131072 to 1/65536 @ .20 @ .30
" 1/262144 to 1/131072 @ .10 @ .20
" 1/524288 to 1/262144 @ .05 @ .10
" 1/1048576 to 1/524288 @ .02 @ .05
" 1/2097152 to 1/1048576 @ .01 @ .02
" 1/4194304 to 1/2097152 @ .005 @ .01
" 1/8388608 to 1/4194304 @ .002 @ .005
" 1/16777216 to 1/8388608 @ .001 @ .002
" 1/33554432 to 1/16777216 @ .0005 @ .001
" 1/67108864 to 1/33554432 @ .0002 @ .0005
" 1/134217728 to 1/67108864 @ .0001 @ .0002
" 1/268435456 to 1/134217728 @ .00005 @ .0001
" 1/536870912 to 1/268435456 @ .00002 @ .00005
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" 1/2147483648 to 1/1073741824 @ .000005 @ .00001
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" 1/17179869184 to 1/8589934592 @ .0000005 @ .000001
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in fair demand and prices are well held,
the others are sold with more or less diffi-

culty and at irregular prices. The distinction between good and inferior Irons is becoming plainly apparent, and low quotations are often due more to the quality of the Iron than to other causes. The aggregate transactions for the week have not been large, and most of them have been made to fill actual requirements, but in a few instances buyers have evidently been quickened by the apprehension that possibly the Western mills might be closed after June 1. As much of the Iron sold in this market is of Western manufacture, the stoppage of the mills in that section would be felt here quite seriously. The store trade is not so good as it was last month. Prices of the Burden Iron Company's specialties have been reduced, and are now quoted as follows: "Burden's Best," base price, 3¢; "H. B. and S.," base price, 2.6¢. We hear of some cutting on Best Refined from store. Nominal quotations are as follows: Best Refined, from store, 2.1¢ @ 2.25¢; at mill, 1.75¢ @ 2.05¢; Common Iron, from store, 2¢ @ 2.1¢; at mill, 1.6¢ @ 1.75¢.

Structural and Shaped Iron.—Very little business is reported for the past week, but contracts for round lots of Beams are pending and may be closed at any day. Quotations are as follows: Angles, 2.4¢ @ 2.6¢ from store; Tees, 2.9¢ @ 3¢ from store; Beams and Channels, 3.5¢ on wharf for round lots.

Plate Iron.—Business is light and prices are weak. Nominal quotations are about as follows: Common or Tank, 2.4¢; Refined, 2.7¢; Shell, 3¢; Flange, 3¼¢; Extra Flange, 4½¢ @ 5¢.

Sheet Iron.—Orders for mill lots have been quite numerous during the past few days, especially for Thin Sheets. Mills making the best grades are very full of orders, and some of the others which supply this market report their sales as having recently been very satisfactory. Some Western mills are refusing to book orders for delivery after June 1. Prices continue as before: Heavy Sheets, Nos. 10 to 16, 2.85 @ 3.15. Light Sheets are quoted in our New York Wholesale Price List.

Merchant Steel.—The local demand is light and the outlook is not very cheerful. From near-by points we hear reports of active competition between the leading Tool Steel manufacturers, accompanied with inevitable cutting in prices. We quote local rates as follows: American Tool Steel, 10½¢, with a concession to large buyers; Crucible Machinery, 6½¢; Bessemer and Open-hearth Machinery, 3¼¢ @ 4¢; Tank Steel, 4¢; Boiler Plates, 4½¢ @ 5¢, with extras for special sizes. English Tool, 15¼¢.

Steel Rails.—We hear of sales of about 2500 tons by an Eastern mill, to go West; 6000 tons by a Northwestern mill; and 1000 tons by an Eastern mill, in small lots of 50 to 100 tons each. Some other sales have been made on private terms of which the quantities are not stated. Inquiries are still reported numerous, but in many cases they come from parties who are unable to furnish satisfactory terms of payment. Competition for fall business is more active than it was two weeks ago, in consequence of mills soliciting orders which were presumed to be out of the market for the greater part of this year. The outlook is therefore discouraging and prices are drooping. For summer delivery \$33 is quoted by Eastern mills, but on later deliveries that price is being shaded.

Wire Rods.—Very little new business is reported for the past week, but inquiries are still being made and trade is not completely stagnant, though the recent spurt in this line seems to have about run its course. Quotations for Steel Rods are unchanged, as follows: \$50 for spot lots and \$48 for future delivery.

Old Rails.—The demand during the past week has not been particularly heavy, though we hear of several transactions. Of Old Iron Rails, 300 tons were sold at \$20, f.o.b. cars Jersey City, and 100 tons at \$19, delivered at Jersey City. Of Old Steel Rails, 300 tons were sold at \$18.50, delivered in the vicinity of the buyer's works.

Wrought Scrap.—No sales and no inquiry are reported. No. 1 is held at \$22 @ \$22.50 from yard.

Metal Exchange.

We are reported the following transactions as having occurred on the floor of the New York Metal Exchange from Wednesday noon of last week to Wednesday noon of this week :

WEDNESDAY, April 30.—Second Call.					
100 tons Straits Tin,	July	.....	1875		
10 " "	"	.....	188		
10 " "	Aug.	.....	1875		
THURSDAY, May 1.					
10 tons Straits Tin,	June	.....	1883		
10 " "	"	.....	1887½		
10 " "	June	.....	1893		
FRIDAY, May 2.					
No transactions.					
SATURDAY, May 3.					
100 tons Pig-Iron Certificates, February...		\$18.50			
100 " "		18.02½			
100 " "		18.62½			
10 tons Straits Tin, Aug.		19			
10 " "		1900			
MONDAY, May 5.					
No transactions.					
TUESDAY, May 6.					
No transactions.					
WEDNESDAY, April 30.—First Call.					
No transactions.					

The above sales embrace 300 tons of Pig-Iron certificates (No. 2) at \$18.50 @ \$18.62½, and 80 tons of Tin at 18.75¢ @ 19.05¢.

A daily "call" on Tin Plates was inaugurated on Monday, the 5th inst., but thus far no sales have been made under this head.

The Secretary has received reports from 56 blast furnaces for the month of April, of which 22 were in blast and 34 out of blast at the close of the month. They report the following stocks and production :

All grades.	Unsold stocks.		Production.	
	Apr. 1. Tons.	May 1. Tons.	In Mar. Tons.	In Apr. Tons.
Anthracite.....	11,620	10,193	8,494	8,910
Bituminous.....	30,468	18,745	13,611	9,981
Charcoal.....	5,276	4,825	2,456	1,016
Total.....	37,467	33,964	23,561	19,014

The Labor Trouble at Tacony.

Erroneous accounts of a recent trouble with the rolling-mill Lands of H. Disston & Sons have appeared in the Philadelphia papers, and, although the matter is not one of great public interest, it is desirable that the facts should be correctly stated, if at all. Forty-four men employed in the rolling mill at Tacony were discharged last Wednesday under the following circumstances: Mr. Horace C. Disston has had the general management of the steel business for the past eight years, but the recent death of his brother, Albert H. Disston, rendered his presence in the office necessary. Mr. S. T. Williams, lately of the Albany and Rensselaer Iron and Steel Company, at Troy, was selected to take his place as general manager of the steel business. Owing to the fact that Mr. Williams had been connected with the Troy works during a bitter struggle of the company with the Amalgamated Association, some of the workmen at Troy sent to men at the Tacony works letters and newspaper cuttings intended to prejudice them against that gentleman. Although there is no branch of the Amalgamated represented in the works at Tacony, these efforts naturally had some effect. The workmen in the Disston mill had a meeting and appointed a committee to wait upon Mr. H. C. Disston, with a request that he make no improvements in the mill, and that Mr. Williams's services be dispensed with. His discharge was not demanded, but it was intimated that the men desired it. Mr. Disston heard what they had to say, and then pointed out the folly of their position. This they seemed to see, and the committee retired. The following day Mr. Disston, feeling that the matter could not be allowed to end there, notified the foreman that he intended to discharge eight of the men who were known to be the ringleaders of the movement. The foreman replied that if this was done all the men would leave, as a petition was ready for presentation demanding the removal of Mr. Williams within two weeks, at the end of which time the men would leave if he did not. Mr. Disston thereupon closed the mills. Those who had signed the petition were discharged, and those who had not were retained. Mr. Williams had given the men no cause to dislike him, and the action of Mr. Disston in resisting an attempt to continue in Philadelphia a quarrel which resulted in breaking up a lodge of the Amalgamated Association in Troy was a necessary measure of self-protection. The temporary stoppage of the steel rolling mill will not in any way inconvenience the business, as they have a good supply of steel on hand and can get more if necessary.

The Building Trades.

The following interesting report of the building trades is from the May number of *Carpentry and Building*:

In accordance with the plan we have followed for several years past, we have recently invited correspondents in every city, town and village in the country to give us the information at their command relating to the present condition of the building trades, the present rate of wages paid mechanics in the various lines, and the prospects for the season both with respect to the work to be done and rates of wages. From several thousand letters received in answer to our request for information, we have attempted to arrange what may be called a bird's-eye view of the entire country, showing in a single article the general conditions and prospects of the business in all the different sections. It is manifestly impossible, within the largest space we could devote to this subject, to enter very much into details. The land is too broad, and there are too many important towns to be considered, even to permit of giving all the more prominent ones the briefest mention. We are obliged, therefore, to consider the country, for the most part, by its great geographical divisions, with more specific mention of States and neighborhoods, and only occasional allusions to those cities and towns the condition of the building trades in which deserves special mention. Those of our readers who have gone to great trouble to give us full and accurate reports of their own communities must not suppose for an instant, because they do not see any mention of their places by name, that their work has been in vain. Every report we have received has been carefully considered and systematically tabulated with others from the same general neighborhood, and each, however unimportant in itself considered, has entered into the sum of our calculations, just as each individual brick forms a part of a completed structure. We could no more spare a single report we have received, without loss, than could individual bricks be taken from a wall without weakening it. We take this occasion to return thanks to all of our subscribers who have so kindly aided us in the enterprise.

Commencing with the New England States, we find that at the present time the majority of the mechanics in each of the building trades in them are employed, and that their prospects for steady work during the season are fully up to the average of past years. Wages are reported as very generally satisfactory, and rule about the same as last year, with an upward tendency in some instances. The work in hand and in prospect is both repairs and additions and new buildings. It is evident that this important section of country, while experiencing no very marked booms, is steadily pursuing the even tenor of its way. The average wages of carpenters throughout the State of Maine is about

\$2 per day, with higher rates in the more important cities. Stone masons average about \$3. These figures are not materially changed in New Hampshire. In Vermont the rates for carpenters are about the same, but masons seem to be getting from 25 to 50 cents per day less than in Maine. In all the more prominent manufacturing towns in Massachusetts there seems to be a better outlook for work at present than last year at this season. Wages are expected to rule about the same as at present. Carpenters are getting \$2.25 to \$2.50, with higher rates in Boston and other important cities. Stone masons range from \$2.75 to \$3.25, the most frequently recurring rate in our report being \$3. The conditions in Connecticut are very much the same as in Massachusetts, but in Rhode Island the prospects, outside of one or two important centers, are less promising, and wages rule at least 25 cents per day less than last quoted above. In Providence it is estimated that the season's business in all respects will be about the same as last year.

The general impression of our correspondents throughout the State of New York is that the building business this year will be about the same as last year. New York City, on account of her position as a trade and financial center, goes on building without regard to times or seasons. Her builders are busy now and have been well employed all winter. Wages in all the trades rule higher in this city than throughout other portions of the State, with perhaps the exception of one or two other large cities, but the increased cost of living more than makes up the difference to the mechanic. Single men may do well in the large cities, but every man of family should rejoice when he is in work at fair wages in the smaller country towns. The average wages of carpenters throughout the State is about \$2.25. Some are receiving less, and very few get as much as \$2.75. Masons average \$2.75 and \$3. Albany and the towns in the immediate neighborhood are paying \$4, and Buffalo \$3.50.

Our reports from Pennsylvania are not quite so encouraging as those from New York. Wages rule at about 10 per cent. less than the rates named for the Empire State—excepting, of course, in the large cities. Philadelphia has one or two very large enterprises under way, and Pittsburgh is probably doing an average amount of building this year. Many of the towns from which we have heard consider the outlook rather discouraging. New Jersey may be described as partaking in some measure of the spirit of the two great States to which she is immediately contiguous. Some towns report prospects excellent and wages good, while others are less hopeful. It is estimated that there will be about the usual amount of building in the various watering-places for which the New Jersey coast is becoming so famous.

Following down the Atlantic seaboard, we find that in Maryland, Delaware, District of Columbia and Virginia the prospects for the season depend in a great measure upon the location. We have the least satisfactory reports in number from Maryland, but, from those we have received, wages seem to rule low, and the prospects are not very flattering. Baltimore, like all other large cities, is doing some building, while the growth of the National Capital, which has already become almost proverbial, is still going on. While there is an absence of very important enterprises at the present time, the general growth of the city, as shown by the erection of dwellings and business buildings, indicates substantial progress. All the towns in Delaware from which we have heard consider their prospects good. Mechanics are fully employed, and wages average about the same as the rates quoted for the State of New York. In Virginia the rates are about the same, and mechanics are busy. In Richmond a large amount of new work is in progress.

There is no particular activity in building matters in either North or South Carolina. Probably an average amount of repairs and some little new work will be undertaken enough in the aggregate to keep the mechanics of these States fairly busy through the season, but not enough to require any outside assistance. In Georgia, on the other hand, notably in her leading towns and cities, the indications are very favorable. A very large amount of work is already under contract and more is contemplated. Brick masons are getting from \$2.50 to \$3.50 per day, and carpenters of real ability from \$2 to \$3 per day. In Florida, outside of the few towns which have become popular as health resorts, there is very little doing. Bricklayers in Jacksonville are reported worth \$3 to \$3.50 per day, and carpenters \$2.50 to \$3, with an upward tendency in both cases. Alabama presents a fairly favorable prospect for home mechanics, but there

very little real activity. Carpenters' wages are quoted from \$2 to \$3. Some of the towns in Mississippi report the prospect at the present time better than a year since. Wages range about as quoted for Alabama. Louisiana shows very little activity throughout the State at large. New Orleans is at present doing more than usual, growing out of the preparations that are being made for the Cotton Centennial, which opens in that city next December, but wages have not been materially influenced by it. Arkansas is making progress in the way of material prosperity. According to the reports from that State, a number of new buildings will be erected during the present season. Wages remain about the same as during last year. Tennessee presents a far more cheerful outlook than most of the Southern States. Chattanooga, Knoxville, Nashville and Memphis are all apparently prosperous, and each reports the building business as likely to be better than last year. This spirit of improvement prevails to a certain extent in other portions of the State. In the cities named masons are quoted at \$3.50 to \$4, and carpenters from \$2.25 to \$3. All the mechanics are at present fully employed. Our reports from Kentucky indicate that rather more building will be done in that State the present year than last. The prospects are very favorable in Louisville, and it is supposed wages will continue during the season at about the same rates as were paid last year. Wheeling, W. Va., as well as other Ohio River towns, is recovering from the disastrous flood of the early spring, which destroyed so much property. The

prospects throughout other portions of the State are not much different from former years.

The three central States, Ohio, Indiana and Illinois, are about alike in their building prospects at the present time. About half of the towns from which we have heard report more building in contemplation than a year since, while the remainder think it will be somewhat less. The work is about evenly divided between additions and repairs and new buildings. Throughout Ohio stone masons seem to average \$2.50 per day, with rates varying from \$3 to \$4 in Cincinnati, Cleveland, Toledo and the other larger cities. Carpenters are similarly quoted at \$2.25 to \$2.50 as the general average of the State. The rates are about the same for Indiana, with a rising tendency in those sections where business is the best. In Illinois about the same conditions prevail. Building is active in Chicago, and wages in all the trades rule higher in that city than in other portions of the State. Rates in Springfield are also above the average. Michigan indicates a fair degree of activity. Wages rule about the same as in Ohio and Indiana, with less difference in the larger cities. Detroit anticipates a larger business this year than last, and yet the wage quotations for that city average lower than for most other places of its size. Masons are receiving \$3 to \$3.25, and carpenters \$2 to \$2.50.

The great Northwest, which has been so rapidly filling up the past few years, and of which the daily papers are never tired of giving famous accounts, might be expected to present a more favorable outlook than is indicated by our reports. It appears that mechanics throughout Wisconsin, Minnesota, Iowa and Nebraska are receiving from 5 to 15 per cent. more than their fellows employed in the Central States, but that outside of some of the leading cities the building business is far from booming at the present time. Only a portion of the mechanics in the building trades were employed at the date of our advices, although it was very generally expected all would find work a little later in the season. For the most part it is expected wages will remain at about present quotations during the summer. It is to be remembered, when considering this section of the country, as well as others which are in process of being settled, that the character of the buildings at first demanded are upon the cheap order, and that it is only after a time that the services of the better grade of mechanics are demanded in the erection of more commodious dwellings, of schoolhouses, churches and other public buildings. Of course, there are exceptions to this general rule, and St. Paul and Minneapolis, Minn., are notable examples in point. These places, which from their age should be scarcely more than villages, are veritable cities, growing with almost unparalleled rapidity. Both have doubled in population within the past three years. The building business in both of them is very active, and seems likely to continue so for some time to come. The buildings erected are of the most substantial character, rivaling those of the older cities of the country in their dimensions, appointments and cost. Wages rule a little higher in them than in the other towns of the State, and yet fully as many mechanics seem to be on hand as are required. A few other important towns throughout this general section of the country present a fair degree of activity. Our remarks about the buildings first required in new sections of the country apply with special force to the Territories lying west of the States we have just described. A few towns

have fitful spells of building, and pay high prices for labor, but in general there is comparatively little to be done. In the mining regions there is always work in progress in the prosperous towns and very little anywhere else. Wages in Montana for carpenters are quoted at \$4 to \$5 per day, and for stone masons and bricklayers \$5 to \$7 per day. Cost of living is believed to be proportionately high. Very little new work is contemplated. In the State of Colorado masons get \$3 to \$3.50, and carpenters \$2.50 to \$2.75. The outlook, especially in Denver, is less favorable than a year since. Missouri and Kansas, on the whole, seem to be more favored than some of the States east of them. More work than last year is reported from almost every town from which we have heard, and mechanics are at present fully employed. St. Louis is paying \$4 to \$4.50 to masons, and from \$2.50 to \$3.25 for carpenters; \$3 seems to be about the average of the State for the former and \$2.25 for the latter. Building in St. Louis, Kansas City and other points is reported exceptionally active. Wages throughout Kansas seem to average a little higher than in Missouri, and all the more important towns seem to be fairly active.

The building outlook in Utah is pronounced very poor indeed. Salt Lake City is decidedly dull. Wages are merely nominal, and many mechanics are out of employment. Very little is doing in New Mexico. Ranching does not seem to demand any very large down or very many buildings of any kind. Our reports from Arizona are meager, and such as we have received indicate that the general outlook is discouraging. Nothing very promising reaches us from Nevada. Quotations of wages in both of these Territories are more than double the rates that are current in the Eastern and Middle States, and still there appears to be very little doing. In California the outlook is far more promising. Considerably more building will be undertaken this year than last year. Mechanics at present are very generally employed. Masons are getting from \$5 to \$6 per day, and carpenters from \$2.50 to \$4, according to location and activity of trade. Oregon sympathizes somewhat with California, and gives indications of healthy growth and development.

We must not neglect the Lone Star State. It is important for its size and the great possibilities that are locked within it, waiting only the proper key for their development. Our reports from Texas, without an exception, are favorable. In most of the older towns more building will be done this year than last year. Wages rule about midway between the figures of the Middle and Eastern States and the high prices of the Territories and mining districts west of it. Carpenters are quoted at \$2.50 to \$3, and bricklayers at \$3 to \$5.

In general, it may be said that there will be a fair amount of work to be done this year in all sections of the country. There does not seem to be any likelihood of material change in wages from present rates. There are no apparent causes for great strikes, and there are very few disturbing elements in the building trades in sight at the moment. It would seem to be a favorable time to invest in buildings, so far as labor is concerned. While very few mechanics have any special cause to rejoice at the present situation, equally few have any great cause to complain. The year, in point of building, so far as can be judged at the present time, will be about up to the average in all respects.

Sale of the Allentown Iron Company's Works.—At Philadelphia, on the 7th inst., the property of the Allentown Iron Company was offered for sale by Auctioneers Freeman & Co. The property, which is located near Allentown, Lehigh County, Pa., includes a tract of land on the Lehigh River, in Northampton Township; a tract of land in South Whitehall Township, together with the buildings and improvements, comprising 5 blast furnaces, 5 steam engines and machinery, foundry and machine shop, dwelling houses and other buildings, wharves, railroads, quarries, 6 locomotives, 108 ore cars, 66 stone cars and 23 cinder cars. Also all the ways, woods, water-courses, rights, &c. The sale is due to the company's failure to meet the interest due bondholders under the provisions of a mortgage deed of November, 1877. The property was bought in by the president on behalf of the bondholders. The price paid was \$50,000.

Canadian Drawback on Cut Nails.—An order in council was issued, at Ottawa, Canada, on the 3d inst., allowing a drawback on exports of cut nails manufactured in Canada, not finer than small thirds, of 90 per cent. of the duty paid on iron imported to make them. When trouble arises in establishing the value a specific duty of 16 cents per 100 pounds will be allowed on bar iron, nail strips or steel, or 8 cents on puddled bars used with scrap or other duty-free material, the latter not to exceed 25 per cent. of the quantity.

Last week Messrs. P. Lorillard & Co., the well-known tobacco manufacturers, opened a free library and reading-rooms for their 300 employees at Bormann Hall, Jersey City, N. J. At one end of the hall is a large room to be used exclusively by the female employees, and at the other end is a large room reserved for the male hands. The rooms have been comfortably fitted up with tables and chairs, and are well lighted and ventilated. Ten thousand volumes have been ordered and 6000 were on the shelves. Excellent judgment has been displayed in selecting the works. Nearly 100 newspapers and magazines and periodicals will be taken regularly. In addition there are playing cards, chess, dominoes and other games, but gambling is prohibited. The object is to furnish the employees a place where they can pleasantly and profitably spend their Sundays and evenings without cost. The entire expense is to be defrayed by the employers. The rooms are to be open every day, from 9 in the morning till 10 at night.

The trial shooting on board the Chinese armor-plated ship *Chen Yuen*, which took place on April 1, when returning from Eckerd, foerde, according to information received has given most favorable results. Krupp's cannons, 30½ cm. caliber (about 12 inches) and 25 diameters long, of which there were two in each of the two towers, were first discharged singly, being each loaded with 220 pounds of powder; then all four cannons were discharged at once, by which 880 pounds of powder exploded at the same moment. The ship did not suffer the slightest damage from the discharging of the cannons, nor did the shooting affect the electric illumination which was in operation during the whole of the proceedings.

A leading advocate of the cable-railway system declares that its main advantages over the whole method of propulsion by horse-power are as follows: First, increased speed; second, the ability to provide transportation to the full requirement of the public, even during what are called commission hours; third, cleanliness; fourth, absence of noise caused by the clatter of horses' hoofs; fifth, freedom from snow blockades in winter; sixth, superior construction of the cars and tracks.

In one of the Western cities, a short time ago, the fire marshal was making an inspection of a factory in which a number of girls are employed, and, finding the only fire-escape to be an iron ladder in the rear portion of the building, he asked of the proprietor of the mill: "In case of a fire, how many of the girls do you think could descend that ladder?" "Vhell, I haf thought aboutd dot," was the calm reply, "and I haf arranged for all der girls to come down shairs, and all der men to go down mit der ladder."

Last week we reported the inauguration among British shipowners of a movement to withdraw a portion of their vessels from service until business improves. The scheme did not meet with favor at Glasgow, but on the 1st inst. a meeting of shipowners at Newcastle approved of proposals to lay up one-fourth of their tonnage, in view of the present condition of the freight market. Steamers engaged in trading will contribute to the expenses of the laying up.

The English firm of Messrs. G. Elliott & Co. have completed what they claim to be the largest and longest wire rope in the United Kingdom. The rope is $4\frac{1}{2}$ inches wide by $\frac{3}{4}$ inch thick, and weighs about $8\frac{1}{2}$ tons. The whole is composed of eight round ropes sewn together. The rope will bear a strain of 140 tons. The length is 1040 yards, and the rope is constructed for the famous Ashton Moss Colliery, in Lancashire.

English Letter.

(From Our Regular Correspondent.)

LONDON, ENG., April 21, 1884.

THE PAST WEEK

has been much broken into by the Easter holidays, which were exceptionally protracted, despite the Siberian east wind which has been searching out our very marrow during the past 10 days or so. It may not or it may be true that we Britishers "take our pleasures sadly," yet it cannot be denied that we do take them when opportunity serves, and that the established bank holidays are very generally observed. There are four of these occasions in the year, namely, the day after Christmas Day, Easter Monday, Whit Monday and the first Monday in August. When Sir John Lubbock's bill passed through Parliament, making these days legal holidays for the banks, it was not supposed that the days would be generally kept; yet in the course of a very few years they have become universal holidays, and are as sacred to relaxation as any of the few other "off" days in the British calendar. The fact is that as a nation we have extremely few holidays, and, as these four days are judiciously selected, they hit the public fancy, and are hailed as being the right thing at the right time. This year the manufacturing section of the community has been glad to have an opportunity of ceasing work, which has been done for the whole week in all cases where orders were not of a decidedly urgent nature. In an ordinary way it does not pay to run machinery unless the whole of the plant is utilized, but on this occasion the masters have indulged their own inclinations by remaining closed the whole week, whether the men liked it or the contrary. It is to be noted that the holidays just over have been characterized by much less drunkenness and rowdiness than has been the case on former occasions. It is possible that the spread of education may have something to do with the improvement, but, at a rough guess, I should suppose that at least as much is due to the depression of trade, which limits the earnings, and therefore the spending power, of the average British workman. Anyhow, the change is a welcome one.

As regards the state of trade and commerce there is really very little that is new to report. Everything is almost unaccountably dull in every branch. The quantity of idle shipping is increasing weekly at all the great ports, owing to the fact that freights are not obtainable on a remunerative scale. New orders for ships are consequently very scarce, and, when given out, are mostly for foreign or Colonial buyers. Shipping companies are not earning their salt on cargo work, and even the passenger lines are cutting each others' throats in fine style. All the markets seem to be overstocked with goods, yet the process of production goes on apace, and the already overburdened warehouses are being further crammed. We in this country are not alone in our troubles, for similar accounts reach us from France, Belgium and Germany, while your own market does not seem to be anything like a boom. Perhaps we suffer more than any other country, owing to the absence of a protective tariff and by reason of our own limited consumptive powers; yet I am bound to say that the doctrines of the fair traders do not appear to make much general progress, and the country as a whole may be deemed faithful to free trade. Perhaps the fair traders are growing. They allege they are very strong at Birmingham and Sheffield, as well as in Lancashire, but if so it must be owned that they are under cover of a great and mysterious silence.

THE IRON MARKET

is in no sense changed. From almost all quarters there are complaints of dullness and the keenness of current competition, with prices which are declared to represent the utmost that can be done without actual losses being incurred. The means of production are so large that the aggregate turnover of many kinds of iron is still heavy, but it is believed that the make is now being gradually lessened, and it is tolerably certain that, unless values should harden—of which there is little or no probability—much more plant will be stopped. The quarterly meetings do not appear to have had the slightest effect upon the course of business, and selling values are just as nominal and irregular as at any time during the past five or six months. The movements initiated in the North of England, Scotland and Staffordshire for the reduction of the ironworkers' wages are natural and necessary results of the state of trade, and it is hoped that settlements may be arrived at in an amicable manner. Some of the men in Scotland have been out on strike, but have resumed operations. At Glasgow warrants have been almost inoperative, with nominal fluctuations in prices, which closed at 42/4½ p. ton. Shipments are on a fair scale, but are about 10,500 tons below those for the corresponding period of last year, the decrease being wholly in respect of foreign requirements. Stocks are now 11,000 tons larger than they were a year ago, and that despite the fact that for several weeks past 18 fewer furnaces have been at work, thus lowering the output by about 3600 to 3800 tons weekly.

At Middlesboro' the market remains dull and lethargic, the local consumption being on a relatively limited scale. Shipments are moderate, about 8000 tons more having been sent to Scotland this year than last year to date. For No. 3, 37/ @ 37/3 is asked, No. 1 being 41/, and No. 2, 39/, all for net cash, f.o.b. at makers' wharves in the Tees. Hematites are dull and in excessive supply. For North of England sorts, prices are 48/6 for No. 1, 47/6 No. 2, and 47/ for other numbers. West Coast mixed lots stand at 46/ @ 47/6, with hardly any new demand for export. The American market is of scarcely any value at all to this industry at present. Other grades of crude iron are as mentioned last week, and are all in favor of buyers. Heavy manufactured iron is quiet as regards shipbuilding sorts, but there is a large output of iron for construction purposes, and a steady production of boiler plates, chain and cable iron and special sorts. Fencing wire is dull, with a disturbed market, owing to the strike. For the same reason wire rods

are neglected on home account, albeit large lots are going to the United States. Galvanized iron is in very moderate request, and I hear of much cutting in prices to secure the few orders given out from time to time. Ordinary finished iron is irregular, slow of sale and nominal in value all around. Such being the case, it is impossible to give other than approximate values, which are roughly based on £7 @ £7. 10/ for marked bars, £6 @ £6. 15/ for medium, and all sorts of prices for common, from £6 down to £5 for Welsh assortments. Sheets are fairly steady, but do not meet with a very lively consumption. Prices range from £7 to £10, according to brand, description, &c., Swedish hammered bars from stock are called £10. 10/ @ £11. 11/, and Swedish railroads at £11 p. ton. Iron rails are in poor request. For old rails 58/ @ 60/ p. ton is asked by holders of D. H. stocks, which in London are light, so far as dealers are concerned. Heavy wrought scrap is quoted at 48/ @ 49/, f.o.b. London, for No. 1 assortments, and is scarce. Freight as last week, rates for pig iron from Glasgow to New York by ordinary steamers being easy at about 5/ p. ton. Tin plates from Liverpool to New York are 7/6 p. ton. Steel is very quiet in almost all directions, scarcely any firm in the various branches being fully occupied. Those doing best are the Sheffield houses with specialties in forgings, castings or high-class brands of steel for tool or engineering purposes. Bessemer bars are £7. 15/ @ £8, hoops £7. 15/ @ 8. 5/, and sheets or plates £9 @ £10. 10/ p. ton. Crop ends are very firm at 52/6 @ 55/ p. ton, f.o.b. usual ports, with very light stocks on hand. Steel rails are without special features to note, at £4. 17/6 for flange sections of 50 lb per yard and upward. New business is scarce.

THE IRON AND STEEL INSTITUTE

spring meeting, to be held in London at the end of the month, may be dull of itself, but it may not improbably be lively in reference to the vacillating policy which has surrounded the subject of the autumn meeting of 1884. I am quite sure that I embody the sentiments of the majority of the members when I state that they are deeply disappointed by the non-acceptance of the courteous invitation of the American Institute of Mining Engineers. Why that invitation was not accepted I cannot and do not pretend to say. Possibly it arrived too late for the council to make the necessary arrangements; possibly it did not do so. It was very well known months ago that such an invitation would in all probability be forthcoming. I can only hope that it was not decided to refuse the invitation prior to its receipt. Without knowing the motives which have led the council of the Institute, I venture the guess that the old tariff business has had something to do with it. If so, the council must be prepared to defend themselves from the charge of inconsistency, seeing that they have visited Germany, Austria and other countries where protectionism flourishes, and cannot decently refuse only the States on that ground. Further, I should not be surprised if the meeting at Chester should not prove a decided fiasco—indeed, there are those who shake their heads and prophesy that the action of Sheffield in refusing to allow the members to visit works will prove the beginning of the disintegration of the Institute. Without going so far as that, I should not be surprised to learn that the autumn meetings where wholly abandoned, and only one meeting held yearly—in London.

SCOTCH PIG IRON

is practically unchanged on the week, the margins on warrants having in no case exceeded 2d. p. ton. They are now 42/4, as against 47/ a year ago, when the stocks were much smaller, but the make on a larger scale. There are now 92 furnaces at work (including 9 on hematites, &c.) in Scotland, as compared with 113 this date 1883, the production being thereby lessened by about 3600 tons weekly. In Connal's stores there are 593,339 tons (a decrease last week of 510 tons), as against 582,246 tons a year back. The shipments to date have been 152,740 tons (of which 91,501 tons foreign and the balance coastwise), or a falling off of 11,920 tons when compared with the same period of last year. Last week's shipments were 1450 tons worse than those of the same part of 1883. The importations into Scotland of Middlesboro' iron to date this year have been 78,925 tons, or an increase of 4474 tons over 1883 to same date. Last week's importations in this respect showed a large decrease. Makers' brands are as per cable at date.

MIDDLESBORO' PIG IRON

does not improve, the shipments this month to date being 12,000 tons or so behind those for the corresponding period of last year. The local consumption is poor, many of the mills devoted to plates and other sorts of shipbuilding iron being partially, or even wholly, laid off for want of orders. For No. 3, 37/ @ 37/3 are quotations, with G. M. B., f.o.b. at makers' wharves in the Tees, as under:

No. 1 Foundry.....	41/3	Mottled.....	35/3
" " ".....	39/3	White.....	35/
" " ".....	37/3	Refined metal.....	33/
" " ".....	36/3	Kentledge.....	32/6
" " ".....	36/9	Cinder.....	34/6

As I write, a telegram is to hand announcing that the arbitrator to whom the wages question had been referred has decreed a reduction in wages of 2½ % only, whereas the employers asked for a drop of 10 %. The reduction will affect the present quarter, and will cover the period from March 31 to June 30. It is hoped that both sides will loyally observe the arbitrator's award.

HEMATITE PIG IRONS

remain extremely dull, with a comparatively limited amount of business doing, and steadily growing stocks, even in the teeth of the largely reduced rate of production. Your market is being closely studied, but as yet has not yielded orders of any note. Mixed lots in usual proportions may be called 46/ @ 47/6, and West Coast makers' brands are:

No. 1.....	No. 2.....	No. 3.....
Cleator.....	49/	48/6
Lonsdale.....	48/	47/6
Workington.....	47/	46/6
Lowther.....	47/	46/6
Distington.....	47/	46/6
Harrington.....	48/	47/6
Solway.....	47/	46/6
Maryport.....	47/	46/6

North of England sorts are as under, f. o. b. Cumberland ports, &c.:

No. or quality.	Ordinary.	Bessemer.
1.....	48/6	
2.....	47/6	
3.....	47/	
4 Foundry.....	47/	
4 Forge.....	47/	
Mottled.....	47/	

Last week's West Coast exports included 12,067 tons of pig iron and 5880 tons of steel rails.

TIN PLATES

are in a slightly anomalous position, but for the moment they are stronger in value, and may possibly reach distinctly higher figures in the course of the next month or so. An attempt has been made to impose a general advance of 1/ per box, but I do not hear that the movement has been successful all along the line, although the majority of the makers have held out for, and many have obtained, 6d. @ 9d. per box more money during the past few days. It is held that stocks are decreasing concurrently with a lower rate of production, while, on the other hand, it is urged that the make, albeit nominally smaller, is in reality more than equal to the enlarged demand to which the makers point in support of their views.

SCIENTIFIC AND TECHNICAL.

Trials of Armor Plate in Denmark.

An account of the armor-plate trials carried out on the Island of Amager on March 20 and 21 has appeared in the *Army and Navy Gazette*. The four plates were bent on an inside radius of 10 feet 9 inches. Each formed a separate target, the English plates being fixed by means of 12 bolts to the backing, that of Marrel Frères by 11, the Schneider solid steel plate by 16 bolts. A 15-centimeter (nearly 6 inches) Krupp gun, 34 calibers long, and an 18-ton Armstrong muzzle-loading gun, were used. The projectiles consisted of 5½-inch and 10-inch steel shell of the latest pattern manufactured at Essen, also 5½-inch chilled-iron shell and solid 10-inch chilled shot of Swedish manufacture. The latter was only used against the Cammell compound plate. The range was 100 meters (328 feet). On March 20 the experiments commenced with a round of steel shell at each plate. All the four shells struck the plates full in the center, penetrating the Marrel plate considerably, two large cracks starting from point of impact to the edges of the upper and right side of the plate. The Cammell plate was slightly penetrated, and showed a few surface hair-cracks. The Brown plate showed deep cracks running from the point of impact to the left side of the plate. The shell penetrated the Schneider plate to a considerable depth and cracked it in half from top to bottom through the point of impact. The next experiment was made on the left-hand lower corner of each plate, the 10-inch gun being fired with steel shell. The first shot knocked the whole left side of the Schneider plate off its target. The lower part of the Marrel plate was completely wrecked; the shell, passing through the target, was picked up uninjured a long distance in the rear. The English plates broke up the shell as they passed through. The Cammell plate showed a few additional surface cracks; the shell striking the Brown plate somewhat low down, broke off the corner. On the 21st experiments were resumed. A solid 10-inch chilled-iron shot was fired with a charge of 63 pounds of powder at the Cammell plate. Although the shot did not penetrate the compound plate, the target was flung bodily to the rear. A 5½-inch chilled-iron shell was next fired at the Brown plate. This opened up a horizontal crack in the plate through its entire thickness, breaking it into three pieces, a similar shell completely destroying all that remained of the Marrel plate. In these trials, 467 pounds weight of metal were fired at the Schneider plate, 569 pounds at the Brown and Marrel plates, and 832 pounds weight at the Cammell plate.

Potential Energy of Gunpowder.

One of the recent course of lectures on "Heat in Its Mechanical Applications" that have been delivered at the British Institution of Civil Engineers was by Capt. Andrew Noble, the subject being "The Heat Action of Explosives." After considering a number of different explosives, including gun-cotton and certain explosive gases, Captain Noble gave an account of some experiments made by Sir Frederick Abel and himself with gunpowder and gun-cotton. The lecturer followed by referring to erosion and its effects, and added that he was not one of those who advocated or recommended the use of gunpowder giving very high initial tensions. If such a course were followed, much would be lost and little gained. The bores of guns would be destroyed in a very few rounds. There was no difficulty in making guns to stand pressures much higher than those to which they were normally subjected, but then they must be in a serviceable condition. Nine-tenths of the failures of guns with which he was acquainted had arisen, not from inherent weakness of the guns when in a perfect state, but from their having, from one cause or another, been placed in a condition in which they were deprived of a large portion of their initial strength. He added that, with a given weight of gun, a higher effect could be obtained if the maximum pressure was kept within moderate limits. He stated that the actual pressure reached by the explosion of gun cottons experimented with by Sir Frederick Abel and himself, assuming the gravimetric density of the charge to be unity, would be between 18,000 and 19,000 atmospheres, or, say, 120 tons on the square inch. While at the same density, in a closed vessel with ordinary powder, the pressure reached about 6500 atmospheres, or about 43 tons on the square inch, he had found it possible to measure the pressures due to the explosion of charges at considerably higher density, and had observed pressures of nearly 60 tons with a density of about 1.2. He stated that he could not agree with those who were in favor of the strongest—meaning by the term the most explosive—powder manufactured. To show the advance that had been made by moving in exactly the opposite direction, he exhibited diagrams of two guns of precisely the same weight, but differing in date by an interval of 10 years.

One of these guns was designed to fire the old-fashioned R. L. G., the other, modern powders. The maximum pressure in the older gun was nearly double that in the modern gun, while the velocity developed by the latter was twice, and the energy not far from three times, that of the former; and if the foot-ton per inch of shots' circumference were taken to represent approximately the respective penetrating powers of the projectiles, the superiority of the modern gun would be still more apparent. He directed attention, however, to one point. The new gun was a thermo-dynamic machine much less efficient than the old. This arose chiefly from the fact that, although the new gun was absolutely much longer than its rival, it was, taken in relation to the charge, much shorter—that is, the gases were discharged at the muzzle at a much higher tension.

It remained to consider the total amount of energy stored up in explosives. In the case of the most important—gunpowder—he stated that the total energy stored up was about 340,000 kgm. per kg. of powder, or, in English measure, a little under 500 foot-tons per pound of powder. He said that if the potential energy of 1 pound of gunpowder was compared with that stored up in 1 pound of coal, his audience, being accustomed to the enormous pressure, developed by gunpowder, might be somewhat astonished at the results of the comparison. The potential energy of 1 pound of gunpowder was as nearly as possible 1/5 of that of 1 pound of coal, and 1/5 of that of 1 pound of hydrogen. It was not even equal to the energy stored up in the carbon which formed one of its own constituents. As an economic source of power, coal had the advantage by at least 2000 to 1. He had stated that the total theoretic work of gunpowder was a little under 500 foot-tons per pound of powder, but it might be desirable to mention what proportion of this theoretic work was realized in modern artillery. He concluded by arguing that, were it necessary to urge the claims of the modern science of thermo-dynamics, he might take, as perhaps the most striking instance, the progress of artillery during the last quarter of a century. Twenty-five years ago our most powerful piece of artillery was a 68-pounder, throwing its projectile with a velocity of 1600 feet per second. Since then the weight of our guns had been increased from 5 tons to 100 tons, the projectile from 68 pounds to 2000 pounds, the velocities from 1600 feet to 2000 feet per second, the energies from 1100 foot-tons to over 52,000 foot-tons. Large as these figures were, and astonishing as were the energies which in a small fraction of a second could be impressed on a projectile of nearly a ton weight, they sank into the most absolute insignificance when our projectiles were compared with other projectiles, velocities and energies existing in nature. Hertz had given an estimate of the heat that would be developed if the earth were suddenly brought to rest, but if, looking at the earth in an artillery point of view, and following the principles he had laid down, the earth was considered as an enormous projectile, and if it was supposed, further, that the whole energy stored up in gunpowder could be utilized, there would yet be required a charge 150 times greater than its own weight, or 900 times greater than its volume, to communicate to the earth her orbital motion.

Phosphorescent Light.

In his "Science Notes," in a recent number of the "Gentleman's Magazine," Prof. W. Mattieu Williams says: "My note on this subject last July was preceded by one on the researches of Professor Radziszewski. I learn that he has actually separated the luminous matter of the *Pelagia noctiluca*, one of the multitude of species of marine animals that appear like little lumps of jelly, and produce the phosphorescence of the sea. He evaporated to dryness 180 specimens, and from the dry residue dissolved out by means of ether a peculiar kind of fat, which, mixed with potassa, gives out, when shaken, phosphorescent flashes. This is exactly what happens to the living animal. When quiet it is not luminous, but if shaken or rubbed it flashes. I have collected and examined a great variety of these animals at different times, the most remarkable occasion being one morning after a magnificent display of marine luminosity in the Mediterranean, a few miles off the shore of Algiers. The surface of the sea was incrustated, I might almost say, with countless millions of small jelly-like creatures, of spherical, ovoid, oblong, dumb-bell and other shapes, varying in size from a mustard seed to a pea; a bucketful of water taken over the ship's side appeared like sago broth. They were all internally dotted with a multitude of what I suppose to be germs, that would be liberated on the death and decay of the parent. The practical importance which I attach to the study of the luminosity of these creatures is the fact that they supply light without heat. The costliness of all our present methods of artificial illumination is due to the fact that we waste a largely disproportionate amount of energy in producing heat as well as light. This wastefulness may be illustrated by supposing that we obtain a pound of the phosphorescent fat of the *noctiluca* and divide it into two equal halves, making one half into candles to burn in the ordinary manner, and using the other half to give out its light by cold phosphorescence. I am not able to give precise figures, but I believe that I am well within the truth in estimating that the candle would dissipate 95 per cent. of the potential energy of the fat in the form of heat, giving but 5 per cent. of the amount of light that the other half pound would emit as cool phosphorescence. Let us, then, hope that Professor Radziszewski will continue his researches, and discover the whole secret of both the analysis and synthesis of this fat, and that of the glowworms, the fireflies, &c. Now that we can supply the confectioner with the flavors of almonds, raspberries, jargonelle pears, nectarines, &c., and imitate the perfumes and the richest colors of nature's sweetest and brightest flowers, all by the chemical manipulation of coal tar, we need not despair of solving the chemical problem of transforming mutton suet, or palm oil, or vaseline, into glowworm or *noctiluca* fat, to be used for illuminating purposes."

A Gas Indicator.

An indicator of gas leakages has been constructed by Mons. C. V. Jhan, and is described in the *Revue Industrielle*. The apparatus consists of a vessel of porous earthenware, such as the porous cell of a galvanic battery, set upside down, and closed by a perforated india-rubber stopper. Through the hole in the stopper the inside of the vessel is connected with a pressure-gauge containing a little colored water. The vessel can be exposed to the air of an apartment where a leak of gas is suspected, or a sample of the air may be contained in a bell glass inverted over the porous cell. The diffusion of gas through the earthenware raises the level of the water in the pressure-gauge, and when the latter is properly graduated and proportioned to the capacity of the cell exact and delicate indications may be obtained in a simple manner. This species of diffusometer is so sensitive that when an Argand burner is gradually turned down until it is extinguished, the instrument, if held above the burner, will show a considerable rise of the water in four or five seconds. If held over an ordinary burner, turned on just sufficiently to be ignited, the liquid rises very rapidly. When the instrument is graduated in millimeters a volume of 1/2 per cent. of gas in a room may be distinguished by it. An example is afforded by a case of sickness, which, in the opinion of the medical attendant, was due to gas poisoning. Some doubt arose on the point, because gas was not laid on to the house. The diffusometer was brought into requisition, and showed the presence of gas, the source of which was afterward found in a broken main 3 m. distant from the house. A modification of the same instrument is made whereby the sensitive portion is adapted for permanent exposure in any place difficult of access, such as the ceiling of a theater or public building, where gas might be expected to collect, the indicating portion being fixed anywhere within view.

Coal and Iron in India.

The annual "Statement Exhibiting the Moral and Material Progress of India," lately published in England, deals with the fiscal year 1881-82, and, though somewhat out of date, says an English exchange, is full of information, and throws much light upon the economic condition of that country. To the question of the Indian coal supplies considerable importance now attaches in connection with the proposed large extension of the railway system, and on this point the report speaks favorably. As it is, India herself supplies the larger part of the fuel used on her railways. In 1881-82 the quantity of English coal consumed on the Indian railways was 175,951 tons, while of Indian coal 383,709 tons were used. As fuel, English coal is from about 20 to 40 per cent. more efficient than that of India. But whereas the former costs at Madras and Bombay from 15 to 17 rupees per ton, the cost of the Indian coal at the pits ranges mostly from 4 to 5 rupees. The expenses of carrying and handling the native coal have hitherto been so great as to counterbalance this difference in the first cost, but in time the greater facilities for transit may be expected to tell somewhat more in favor of the native product, and cause it to be more generally used. As to the extent to which the Indian supply might be increased to meet our augmented demand, the "statement" is silent. We are told, however, that in 1881 the output from the 66 mines in operation in Bengal was 930,203 tons, against an average of 878,376 tons for the three years previous; that the Central Provinces yielded 67,527 tons, against an average in the previous years of 43,413 tons, and that in Assam there is said to exist a procurable quantity of coal amounting to 40,000,000 tons.

With regard to iron, the report is much less favorable. In almost every part of India iron has been found, and in most parts of the country it has been worked on a small scale. In very few places, however, has it yet been found coexistent with sufficient supplies of coal or of wood of good quality, and the result is that this branch of industry has not been able to bear up against the competition of the cheap English iron. Nor does there seem to be any near prospect of the native manufacture assuming large dimensions, and the official opinion is that there are only three probable centers of iron manufacture on a large scale by the agency of English capital, viz.: (1) the Bengal Iron Works, (2) the Jabalpur district—where trial borings as to the extent and thickness of the coal beds are stated to be very promising—and (3) the Chando coal and iron fields. As to the much-talked-of gold fields of India, nothing favorable is reported, and the only other minerals reported as being worked, and that on a very small scale indeed, are copper, tin, and lime.

A Large Output of Open-Hearth Steel.

One of the steel-melting furnaces at the Mossbank Iron and Steel Works, Scotland, has just turned out one of the largest makes on record since the introduction of the manufacture of steel. The furnace was charged at the usual time (10 o'clock) on Sunday night, and when finished at 1 o'clock on the following Saturday 210 tons 16 cwt. of ingots had been made, suitable for boilers and shipbuilding purposes. It is noteworthy that the increase in the output of open-hearth steel in Scotland between the years 1879 and 1882 was over 400 per cent.—the output in 1879 being 50,000 tons, while in 1882 the tonnage was 213,000.

Patent Infringements.

In the United States Supreme Court at Washington City, on the 5th inst., a decision was rendered in the patent case of the Eagleton Manufacturing Company, appellant, against the West, Bradley & Cary Manufacturing Company and Joseph J. West. Appeal from the Circuit Court of the United States for the Southern District of New York. This was a suit for alleged infringement of a patent upon an improvement in japanned furniture springs granted to the appellant in 1871. The court holds that the patent is invalid, and affirms the decree of the court below. Opinion by Justice Blatchford.

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American Iron.	
Foundry No. 1.	ton \$30.00 @ 21.00
Foundry No. 2.	ton 19.00 @ 19.50
Gray Forge.	ton 17.50 @ 18.50
Scotch Iron.	
Carnbroe.	ton 21.50 @ 22.00
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Shotts.	ton 21.50 @ 21.75
Glenarnock.	ton 21.50 @ 21.75
Cartbarrie.	ton 21.50 @ 21.75
Langloan.	ton 21.50 @ 21.75
Summerlee.	ton 21.50 @ 21.75
Dalmellington.	ton 21.50 @ 21.75
Edinburgh.	ton 21.50 @ 21.75
Clyde.	ton 21.50 @ 21.75

Rails.	
Steel, at Eastern mills.	ton 32.00 @ 33.00
Old Rails, T.	ton 10.00 @ 20.00
Scrap.	
Wrought, per ton, from yard.	22.00 @ 22.50

Bar Iron from Store.
Common Iron:
3/4 to 1 in. round and square... 10¢ @ 21.00
1 to 6 in. 3/4 to 1 in. round and square... 10¢ @ 21.00
Refined Iron:
3/4 to 2 in. round and square... 10¢ @ 21.00
1 to 6 in. 3/4 to 1 in. round and square... 10¢ @ 21.00
Rods—5/8 and 1 1/2 round and square... 10¢ @ 21.00
Hands—1 to 6 in. 3/4 to 1 in. round and square... 10¢ @ 21.00
"Burden's Best" Iron, base price... 10¢ @ 21.00
"Burden's" H. B. & S. Iron, base price... 10¢ @ 21.00
Norway Nail Rods... 10¢ @ 21.00

Sheet Iron.	
Common.	ton 21.50 @ 22.00
American.	ton 21.50 @ 21.75
R. G.	ton 21.50 @ 21.75
Nos. 10 to 16.	ton 21.50 @ 21.75
17 to 20.	ton 21.50 @ 21.75
21 to 24.	ton 21.50 @ 21.75
25 and 30.	ton 21.50 @ 21.75
Galvanized, 10 to 20.	ton 21.50 @ 21.75
Galvanized, 21 to 24.	ton 21.50 @ 21.75
Galvanized, 25 to 30.	ton 21.50 @ 21.75
Galvanized, 31.	ton 21.50 @ 21.75
Galvanized, 32.	ton 21.50 @ 21.75
American Russia.	ton 21.50 @ 21.75
Russia.	ton 21.50 @ 21.75
American Cold Rolled B. B.	ton 21.50 @ 21.75

Iron Wire. See Wire.
STEEL.—Duty: Ingots, Bars, Sheets, &c., valued at 4¢ per lb or less, 45¢ ad. val.; valued above 4¢ and not above 7¢ per lb, 25¢ ad. val.; valued above 7¢ and not above 10¢ per lb, 35¢ ad. val.; valued above 10¢ per lb, 45¢ ad. val. Extras—Steel Bars, Rods, &c., cold hammered or polished, in any way in addition to ordinary hot rolling, 15¢ per lb in addition to above; Steel Circular Saw Plates, 1¢ per lb in addition to the above.

American Cast Steel.
For American Steel, see Pittsburgh quotations.
English Steel.
Best Cast... 10¢ @ 21.00
Extra Cast... 10¢ @ 21.00
Circular Saw Plates... 10¢ @ 21.00
Round Machinery Cast... 10¢ @ 21.00
Swaged Cast... 10¢ @ 21.00
Best Double Shear... 10¢ @ 21.00
Blister, 1st quality... 10¢ @ 21.00
German Steel, Best... 10¢ @ 21.00
2d quality... 10¢ @ 21.00
3d quality... 10¢ @ 21.00
Sheet Cast Steel, 1st quality... 10¢ @ 21.00
2d quality... 10¢ @ 21.00
3d quality... 10¢ @ 21.00
TIN.—Duty: Bars, Sheets, Tapes and Ternes, 1¢ per lb; Bars, Block and Pigs free.

galvanized, 10 to 20.....	72 lb	64¢	54¢
galvanized, 21 to 24.....	72 lb	64¢	54¢
galvanized, 25 to 26.....	72 lb	74¢	64¢
galvanized, 27.....	72 lb	74¢	64¢
galvanized, 28.....	72 lb	84¢	74¢
galvanized, 29.....	72 lb	84¢	74¢
galvanized, 30.....	72 lb	104¢	94¢
galvanized, 31.....	72 lb	104¢	94¢
galvanized, 32.....	72 lb	104¢	94¢
galvanized, 33.....	72 lb	104¢	94¢
galvanized, 34.....	72 lb	104¢	94¢
galvanized, 35.....	72 lb	104¢	94¢
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galvanized, 37.....	72 lb	104¢	94¢
galvanized, 38.....	72 lb	104¢	94¢
galvanized, 39.....	72 lb	104¢	94¢
galvanized, 40.....	72 lb	104¢	94¢
galvanized, 41.....	72 lb	104¢	94¢
galvanized, 42.....	72 lb	104¢	94¢
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galvanized, 137.....	72 lb	104¢	94¢
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galvanized, 141.....	72 lb	104¢	94¢
galvanized, 142.....	72 lb	104¢	94¢
galvanized, 143.....	72 lb	104¢	94¢
galvanized, 144.....	72 lb	104¢	94¢
galvanized, 145.....	72 lb	104¢	94¢
galvanized, 146.....	72 lb	104¢	94¢
galvanized, 147.....	72 lb	104¢	94¢
galvanized, 148.....	72 lb	104¢	94¢
galvanized, 149.....	72 lb	104¢	94¢
galvanized, 150.....	72 lb	104¢	94¢
galvanized, 151.....	72 lb	104¢	94¢
galvanized, 152.....	72 lb	104¢	94¢
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galvanized, 271.....	72 lb	104¢	94¢
galvanized, 272.....	72 lb	104¢	94¢
galvanized, 273.....	72 lb	104¢	94¢
galvanized, 274.....	72 lb	104¢	94¢
galvanized, 275.....	72 lb	104¢	94¢
galvanized, 276.....	72 lb	104¢	94¢
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galvanized, 312.....	72 lb	104¢	94¢
galvanized, 313.....	72 lb	104¢	94¢
galvanized, 314.....	72 lb	104¢	94¢
galvanized, 315.....	72 lb	104¢	94¢
galvanized, 316.....	72 lb	104¢	94¢
galvanized, 317.....	72 lb	104¢	94¢
galvanized, 318.....	72 lb	104¢	94¢
galvanized, 319.....	72 lb	104¢	94¢
galvanized, 320.....	72 lb		

INDUSTRIAL ITEMS.

NEW HAMPSHIRE.

The firm of S. C. Forsaith & Co., machinists and general machinery dealers, Manchester, was incorporated May 1, under the laws of the State of New Hampshire, as the S. C. Forsaith Machine Company, with a capital stock, all paid in, of \$275,000, for the purpose of manufacturing and dealing in machinery and supplies. The officers will consist of D. B. Varney, president, S. C. Forsaith, treasurer, and W. E. Drew, agent, the management being the same as in the past. The firm to which the new company succeeded was established in 1860, the object of incorporation being to still further increase the business, placing it upon a still broader basis than in the past, while the works and office will remain, as in the past, at Manchester.

NEW YORK.

The Stiles & Parker Press Company, of Middletown, Conn., manufacturers of drop presses, have rented a large building at 59 Duane street, corner of Elm street, New York, which, as a branch office, will embrace warehouse and showroom. The company will also use part of the building as a factory. At present they are putting in all the necessary machinery for a shop from which they will in future supply the local trade with presses. This New York office will not in any way interfere with their main works at Middletown, which will continue in operation as heretofore.

Bernard T. Steber, of Utica, has invented an improved match-making machine, and is erecting iron buildings for the manufacture of matches. He expects to begin work in about two weeks. It will be remembered that the works of the Utica Match Company were burned by an incendiary last Christmas. A majority of the directors refused to rebuild the works, and Mr. Steber thereupon determined to enter upon the manufacture of matches himself. He announces that he will not only oppose the Diamond Match Company, but will under no consideration sell out to, combine or negotiate with that corporation.

NEW JERSEY.

The discovery of zinc on the farm of Philip Raub, in Oxford, Warren County, by Hartpence & Swayze, is attracting the attention of mine hunters. The company have erected an engine, pumps and hoisting works, and have already mined quite a large amount from the outcrop, and have also a large amount in sight in their opening. It is a blende, quite rich, easily mined, and lies in the crystalline line formation which extends from the Hudson to the Delaware River, through the County of Orange (New York) and Sussex and Warren counties, New Jersey.

The Belvidere Iron Company, a mining corporation, have recently sunk another shaft on their Little property, and are now taking out from their several openings, and shipping via the Lehigh and Hudson River Railway, about 75 tons daily to various furnaces in Pennsylvania.

Of the 20 blast furnaces in New Jersey only four are in blast. These four are producing about 1500 tons per week, or 75,000 tons annually. Several of those out of blast are now ready to be blown in as soon as the demand and market price of pig iron will warrant it.

PENNSYLVANIA.

Col. Wm. Dorris, who was made trustee by the creditors of Blain Bros., proprietors of the Huntingdon Car and Car Wheel Works, has announced that the works will resume operations shortly. Arrangements have at last been perfected with their creditors whereby Blain Brothers will be enabled to conduct the business as before, and a liberal extension has been granted them for that purpose. A large list of orders is on hand waiting to be filled, consisting entirely of new work.

The Wheeler Iron Company, of Sharon, have shut down their rolling mill at West Middlesex for want of orders.

On the 30th ult., at Erie, James B. and Frank Pierce, of Sharpville, moved for a preliminary injunction to restrain William L. Scott and other stockholders from rebuilding at Erie the Mount Hickory Rolling Mills, destroyed by fire last December. The Pierces own a sixth interest in the concern, and wanted the plant moved to Sharpville. The motion was overruled. It is understood that the Mount Hickory Iron Company's furnaces, located at Sharpville, are to be moved to Erie.

Richard Hecksher & Co., of Philadelphia, are reported to be negotiating with the Philadelphia and Reading Coal and Iron Company for the lease of Swedes Furnace, on the main line of the Reading Road.

It is reported in Titusville that Charles Burgess, of Cleveland, with J. H. Luedden and James D. McKelvy, of Pittsburgh, are negotiating for the purchase of the Eames Iron Works.

At the Philadelphia Bridge Works of Messrs. Cofrade & Saylor, at Pottstown, the output of manufactured iron for the month of April, just closed, was 2,549,362 pounds. The capacity of the works which this indicates is equal to over 15,000 tons per annum.

The statement made last week concerning the excellent record of the Gautier Steel Department of the Cambria Iron Company needs correction in two particulars. The very large output of wire made in one day was "fence" wire, not "finished" wire, and the quantity galvanized on that day was over 50 tons, instead of 30 tons, as published.

The puddle mill of the Bethlehem Iron Company has shut down. It is not known when it will start. About 150 men are thrown out of employment.

The molders employed by the Reading Hardware Company, who have been striking against a reduction for some five months, have effected a compromise with the company and will begin work at once. It is stated that throughout the whole time of

the strike the Molders' Union paid employees who were married men \$7 per week and single men \$3 per week. There were 125 molders concerned in the strike.

A new labor organization called the "Workingmen's Protective Association of the Connellsville Coke Region" has been organized, with headquarters at Scottsdale. It comprises the majority of the laborers of the coke region, and its object is to protect its members against imported contract laborers, and to sustain wages against any reduction that may be offered by the coke operators. In its platform the association advocates the establishment of co-operative institutions, the prohibition of the employment of children, and the reduction of the hours of labor to eight hours per day.

An ax factory is to be started at Brookville, Jefferson County.

It is reported that the Merion Iron Company will blow in their Merion and Elizabeth furnaces, at West Conshohocken, early this month.

Clara Furnace, of Raney & Berger, at Newcastle, is again blowing, after being idle for 10 days on account of the strike of the furnacemen at that place.

Harry D. Ruth has started up his agricultural works at North Wales, Montgomery County. The foundry made its first casting a few days ago.

The stove manufacturing firm known as Rogers & Co., of Downingtown, has been reorganized. A stock company has been formed, with a capital of \$20,000, to be known as the Rogers Stove Company.

PITTSBURGH AND VICINITY.

The fire fiend tried his hand at a blast furnace last week, paying his compliments to Clinton Furnace, of Graff, Bennett & Co., in the shape of a slight blaze. A small fire also occurred at the shovel works of Hussey, Binns & Co. But in neither case was the loss considerable.

All the shafting, pulleys and fittings for the Aurora (Ill.) Cotton Mills, as also those of the Payne Lumber Company's large sash, door and blind factory, at Oshkosh, Wis., have been furnished by Jones & Laughlins, Limited.

The stove men are complaining of dull trade. A representative of the firm of A. Bradley & Co. said recently that trade had never been so dull with them as it is now. They are only running part time, making just what is needed to fill a few orders that are being received. When asked to what they attributed the condition of trade, he said: "There are various reasons for it, yet none of them are sufficient to influence it largely; but I suppose all combined go to make up the cause. The failure of the cotton crop in Texas and the short crops throughout the Western States last year, combined with very bad country roads this spring, have all had their effect. We are controlled here by the West. I don't know that we will shut down entirely, unless the Western men order it, in which case we will."

The strikers at the Wayne Iron Works—Brown & Co.—returned to work on April 28. The firm agreed to withdraw the proposed 10 per cent. reduction for the present.

The wire-rod mill of the Oliver & Roberts Wire Company, Limited, on Ninth street, South Side, will be completed and ready for operations in about 60 days. The mill will contain four roll trains, two and three high, and the other necessary appliances and machinery will be of proportionate capacity. Hitherto the firm have imported wire rods from Germany.

The charter of incorporation of the Axle Oil Company was filed in the Recorder's office last week. The capital stock of the new company is \$500,000, and the business is to be conducted in this city. The incorporators are Frank Semple, H. C. Van Tine, Charles Spear, Charles J. Clarke, W. R. Thompson and John B. Jackson.

The new round-house and workshops of the Baltimore and Ohio, at Glenwood, are about completed.

Two very strong gas wells were completed in the vicinity of Pittsburgh last week, one near Washington and one at Murrysville.

DELAWARE.

William Astor's new steel yacht Nourmahal was launched by the Harlan and Hollingsworth Company, of Wilmington, at 6.46 a. m. on the 3d inst. The Nourmahal is said to be the largest pleasure vessel ever launched in America, and to be the largest yacht afloat. Her dimensions are: Length, 232 feet 8 inches; extreme breadth, 30 feet; extreme depth, 20 feet.

OHIO.

Lambert Brothers' Machine Shops, at Ironton, are now engaged on 32 nail machines for the Norton Iron Works. Half of the castings are made and one-fourth of them are fitted up. The ironwork for the 175-foot stack is about ready to be put up. The same firm are also changing four of the Alice Furnace boilers from cylinder to flue boilers. They have the new bell and hopper for Belfort Furnace nearly done. It weighs 14 tons. It is so arranged that, when the bell is dropped, valves are moved so as to prevent the escape of gas.

Belfort Furnace, at Ironton, will be ready for blast about June 1.

Several blows have been made at the new steel plant of the Bellaire Nail Works, for the purpose of testing the machinery. The result was eminently satisfactory.

Cleveland parties bid in the Enterprise Machine Works, at Geneva, at the recent sale, for \$18,000. The works were originally appraised at \$60,000, and the second time at \$28,000. The works will be set in operation at once.

The Brilliant Glass Works, at Steubenville, which are in the hands of a receiver, are again offered for sale on June 2, 1884. The works are appraised at \$12,000, and are situated in the gas belt.

An output of 3606 kegs of nails in five and one-half days of 10 hours each, with 60 machines, is the best record of the Kelly

Nail and Iron Works, at Ironton. Some of the nails were 2d fine, and none larger than 20d.

Means, Kyle & Co.'s new coke furnace at Hanging Rock is to be called Hamilton Furnace.

Mount Vernon Furnace is now putting in a new Davis hot blast.

Hecla (charcoal) Furnace has been in blast on her present hearth and the hearth which it replaced over 1700 days, and the present hearth is still good. The furnace is at present stopped, but will resume in a short time.

ILLINOIS.

The Western States Construction Company, of Chicago, have been incorporated, with a capital stock of \$10,000; incorporators, Henry V. Pierpont, Willis I. Hitt and John M. Jackson. The object of the corporation is to take contracts for the construction of railroads and bridges.

The S. H. & E. Y. Moore Manufacturing Company have purchased ground in close proximity to the depot at Deering, and will at once commence the erection of a factory for the manufacture of parlor and barn door hangers, locks and light hardware specialties. The machine shop, blacksmith shop and foundry will be fully equipped with necessary tools and machinery. The works are expected to be in running order by June 1.

Some 24 wood-working machines for different parties are being made at the Preble Machine Works, Chicago. These works have been lately equipped with new machinery and are running 15 hours per day.

The Lambert & Bishop Wire Fence Company, of Joliet, will be in their new works, now nearing completion, by July 1.

The Chicago Die and Machine Works are at work on a set of nut-tapping, bolt-heading and cutting-off machines and a bolt-heating furnace for a firm in this State. These works have just completed and shipped a very ingenious pin-making machine, and are doing a great deal in experimental machinery.

INDIANA.

The report is premature that the Indianapolis Rolling Mill Company have decided to alter their plant from rail-making to the manufacture of bar and light iron. They have not yet concluded to do so. At present they are only running their machine shops and foundry, making Greenleaf turn-tables and some other work.

The project of establishing glass works at Michigan City has been given up.

Madison is to have a \$100,000 foundry, a joint stock company having been organized for that purpose.

IOWA.

A barb-wire factory is to be established at Decorah.

MISSOURI.

The Crystal Plate Glass Company, of Crystal City, are putting in six steel boilers of 120 horse-power each, manufactured by Rohan Brothers, of St. Louis. Their boilers will then number 17, developing 2500 horse-power. Their engines are all of the Corlies type, and embody the most recent and improved designs. The company are also building one 24-pot gas melting furnace, which, with their three 16-pot furnaces now working, will bring their product up to 72 pots per day. They are running their grinding and polishing departments day and night, and their annual output of finished glass is about 1,500,000 feet.

MICHIGAN.

Spring Lake Furnace, at Fruitport, at present out of blast, repairing, will probably blow in about June 1. The furnace runs on Bessemer iron.

A plant of hoisting machinery for the Lake Angeline Mine, at Ishpeming, is in course of construction at the Iron Bay Foundry, Marquette. This plant is to replace that recently destroyed in the fire which burned down the engine-house belonging to the mine and crippled its outfit of hoisting machinery. It will consist of six 6-foot hoisting drums, Merritt's external friction, and will be ample to do all the hoisting from the several shafts of the mine. Two 18 x 24 condensing engines, built at the same shops, will furnish motive power for the hoisting plant. The engines will be of the strongest make, and will be supplied with the automatic cut-off. Steam for the hoisting engines will be supplied by a battery of two boilers, 60 inches in diameter by 16 feet in length, and the new engine-house will be built of sufficient size to take in two similar boilers hereafter, when the development of the mine renders that addition to the battery necessary.—*Mining Journal*.

KENTUCKY.

The Norton Iron Works, of Ashland, do not expect to blow their blast furnace in for several months yet—probably not until their mill is entirely rebuilt.

GEORGIA.

The Phoenix Iron Works, of Savannah, and the firm of Wm. Kehoe & Co., of the same city, have been consolidated under the title of the Kehoe Iron Works. The new company now have one of the best-equipped foundries and machine shops in the South. Their sugar mills and pans meet with great favor, the demand for them rendering it necessary for the company to employ from 40 to 50 hands steadily the year round.

VIRGINIA.

Low Moor Furnace now runs with remarkable steadiness and regularity, its weekly product for the past 14 weeks averaging 800 tons a week. Col. W. H. Goodwin is the managing director of the Low Moor Iron Company.

The new Wilton Furnace, on Richmond and Allegheny Railway—the Princess Furnace, of Kentucky, that has recently migrated to Virginia—will soon be ready to go into blast.

Nearly all the Virginia charcoal furnaces are now idle.

Victoria Furnace went out of blast on the 14th ult. for the purpose of relining the furnace and making some alterations which have been contemplated for some time.

Only about 30 feet of the top of the lining was damaged; this could have been repaired without going out but for the contemplated changes. The crucible of this furnace has been a cause of continuous trouble from the time it went into blast.

The blast furnace of the Lynchburg Iron Works, which has been in constant operation for more than three years, was blown out April 19. Repairs are being pushed, and the furnace is expected to be in blast June 1.

WEST VIRGINIA.

Top Mill Furnace of the Wheeling Iron and Nail Company went out of blast on April 22.

HARDWARE NOVELTIES.

The Stearns Barn-Door Hanger.

Another addition to the large assortment of barn-door hangers now before the public has been made by Messrs. E. C. Stearns & Co., of Syracuse, N. Y. The general appearance of this article may be gained by inspection of our engraving. The manufacturers describe it as the only hanger made having a hardened bearing and a wheel turned and finished perfectly. The small roller, shown in the illustration at the back, prevents any side friction. Our read-



Barn-Door Hanger, Made by E. C. Stearns & Co., Syracuse, N. Y.

ers generally will appreciate the neatness of the design and the care with which the parts have been proportioned so as to obtain the greatest strength at points where it is needed.

A New Padlock.

The illustrations which we give herewith represent a padlock quite new in design and appearance, which is about to be put on the market by P. Lowentraub, of Newark, N. J. Fig. 1 shows it ready for use, with the key

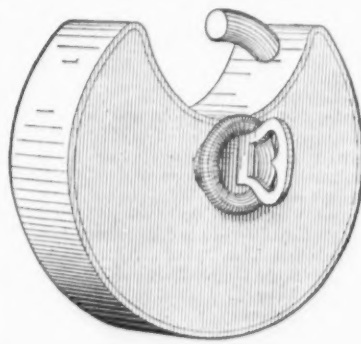


Fig. 1.—The Padlock Ready for Use.

inserted and the bolt partly projected. The knob shown on the face is used in moving the bolt and can only be turned when the key is in the lock, and the construction of this article is such that the key can only be inserted or withdrawn when the lock is locked; consequently, it is impossible to leave the lock closed unless also locked, and

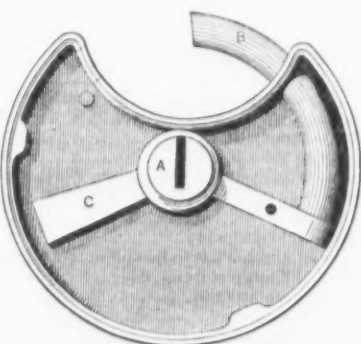


Fig. 2.—View of Interior.

when the lock is opened the key must always be in it. The construction of the working parts of this padlock is illustrated in Fig. 2, which represents its interior; a is a stud with a slit in it, in which the key is inserted, and on this stud the appliance for locking and carrying the bolt turns. The locking part of the padlock consists of three bolts of unequal length, contained in separate chambers in c, which are carried to their places in a, which is immovable, by spiral springs, there being three corresponding bolts of different lengths in the stud. When the key

is removed the bolts in c are thrust by their springs into the stud a, thus securing the lock. The key is made to conform to the different lengths of the bolts in a, so that, when inserted, it throws them outward until they are flush with its outside surface, thus allowing the swivel to which c is attached to revolve freely round the stud a, and so move the bolt, a pin moved by the knob entering the hole shown on the other arm, attached to the swivel. This padlock is made of cast brass, from 7 to 4 inches in diameter. The knob, as indicated in Fig. 1, is chased, and the key is made of steel.

Flower and Fruit Gatherer.

Fig. 3 represents, somewhat indistinctly, an article which is being put on the market by the same manufacturers. It is a combined Flower and Fruit Gatherer, and may with equal advantage be used as a Pruning Shears and Nippers, the general form and construction of which is indicated in the illustration. This Shears is made of malleable iron, and the blades, as represented in the cut, have a cutting blade made of a steel plate which is fastened by a screw to the malleable iron jaw. The peculiar feature of this article, however, is that the jaw under the cutting blade is deepened, so as to form a nipper, which grasps the vine or twig that is to be cut, and, after the cutting, holds it fast, thus obviating the necessity of handling it, and the trouble of picking it up. For neat work and in trimming bushes fortified with thorns this contrivance possesses an



Fig. 3.—Pruning Shears and Nippers.

obvious advantage. The manufacturer is at present making only one size—6 inches in length—which is finished either in Japan or nickel-plated.

The Clipper Condensing Coffee or Tea Pot.

The illustration which we give herewith represents an article which the Clipper Manufacturing Company, 543 West Sixth street, Cincinnati, Ohio, are putting on the market. It will be perceived that in many respects it does not differ from other similar articles which are known to the trade, but it has its special features which are covered by a patent which the manufacturers have recently obtained. It has, as will be perceived, a water-cup in which cold water



Clipper Coffee-Pot.

is placed to serve as a condenser, and underneath this is a lawn sack into which the ground coffee is placed. The cover and the cap on the spout, with the condensing feature above referred to, are claimed to make the pot steam-tight, thus retaining the aroma and strength of the coffee. But the special feature to which the manufacturers call attention is the discharge of the cold water from the cup into the body of the pot to clarify the coffee, there being a small opening in the cold-water cup which, when the pot is slightly tipped, allows the water to run down into the made coffee, thus serving the same purpose as pouring cold water into the coffee-pot, as is frequently done.

A Receiver for the Allegheny Valley Railroad.—At Greensburg, Pa., on the 2d inst., James A. Long and Wayne MacVeagh, representing the Pennsylvania, the Northern Central and the Philadelphia and Erie Railroad companies, applied for the appointment of a receiver for the Allegheny Valley Railroad Company. In the bill presented, plaintiffs show that the Allegheny Valley is a debtor to the amount of \$27,600,000; that the Pennsylvania Railroad is its creditor for \$13,600,000, and that the Allegheny Valley has failed to meet its indebtedness. The defendants, as trustees of the Allegheny Valley, are Townsend Whelen & Co., James Murray, John P. Lyon, William J. Howard, the Safe Deposit Company of Pittsburgh and John P. Green. The court appointed John Scott and W. H. Barnes, receivers, and they gave bonds in the sum of \$200,000. The receivers are to take immediate control of the road. The court issued an injunction against the Allegheny Valley and all persons interested, restraining them from pushing their claims before a final settlement is made. The receivers have employed Messrs. Moorhead and Head, and it is understood that they, after having ascertained the financial standing of the road in detail, will make a sale of it, and that the Pennsylvania Railroad Company will be the purchaser.

Mr. Andrew Carnegie has made an absolute gift of \$50,000 to Bellevue Hospital Medical College of New York. This sum is to be expended in the erection of a building and an apparatus to be devoted to laboratories for practical work and teaching in medicine. It is the design of Mr. Carnegie to establish a laboratory for the conduct of microscopical investigations, for which this country now affords no facilities adequate with the importance of the work.

TRADE PUBLICATIONS.

Standard Gears.

The Brown & Sharpe Manufacturing Company, Providence, R. I., have issued an attractive and neatly-arranged catalogue relative to the subject of standard gears, the lists of sizes prepared by them embracing two classes—"combination gears," so called from being especially arranged to admit of a great variety of combinations for transmitting power, and "change gears," in which are included those used for screw cutting. The catalogue gives dimensions, styles, prices, and also distances of centers between gears, with the ratios of speed or power, illustrations of the different styles, and also of the epicycloidal and involute cutters used in cutting the teeth. By making these gears in quantities with automatic machinery, the Brown & Sharpe Company are enabled to furnish them at lower prices than they can be made for in small lots in the usual way, and to give users so large a variety to select from as to meet the usual requirements of machine builders. They have now on hand all sizes of spur gears from 4 to 20 pitch, as per dimensions and prices given in their catalogue, the gears being accurately made from iron patterns and uniform in style. It is understood that to the lists just issued will be added from time to time other lists of spur, bend and mitre gears, with both cut and cast teeth, worms, hand and worm wheels, &c.

Blast-Furnace Appliances.

The Weimer Machine Works Company, of Lebanon, Pa., have just issued an illustrated catalogue which contains cuts and descriptions of Weimer's blowing engines and his patent water-cooled and other blast-furnace appliances, besides mining machinery, hot-blast stoves, injectors, &c. The first blowing engine built by this company was designed 30 years ago, and was of the horizontal, double-cylinder, grand type, with large air-valves. In 1876, as the result of extensive investigation, they designed and built their first high-speed engine, operating at the International Exhibition in Philadelphia, shortly after which it was put to practical use in supplying air to a blast furnace. The Weimer blowing engines were all formerly fitted with flexible valves, but within the past two years they have introduced a series of all-metal circular valves, made of the necessary area for the highest piston speed attainable, and which may be depended upon to operate for at least five years without needing any repairs. The Weimer blowing machinery is classed under five heads, as follows: For anthracite furnaces, for coke furnaces, air compressors, for charcoal furnaces and Weimer power blowers, the engines for coke furnaces including Bessemer blowing engines, each of these divisions including a number of engines of different power and capacity, comprising all the sizes in ordinary use. Besides the blowing engines the Weimer Machine Works Company build their patent water-cooled blast-furnace, also hot-blast stoves, ore roasters, blast-furnace hoists, charging apparatus and many miscellaneous appliances. The water-cooled apparatus, which is the practical result of a number of elaborate experiments, have many advantages to recommend them, more especially, however, their greater durability. The catalogue, which is bound in cloth, is finely printed, contains a large number of excellent illustrations, and is in every way an admirable publication.

Force and Suction Pumps.

The illustrated catalogue of the P. B. Grove Pump Company, of Philadelphia, Pa., contains all information necessary to purchasers of their pumps. The "Acme" force and suction pump is made with seamless drawn brass cylinders, and so constructed that, after being placed in the well, in case of accident the cylinders may be detached by merely taking out one pin, without disturbing the position of the pump or even allowing it to lose its priming. All the cylinders and valves of this pump are made of brass. A table accompanying the illustration gives the price of the pumps with all necessary fittings for wells of from 10 to 130 feet in depth. The company also make the "Challenge" submerged double-action force pump, the Nonpareil double-action force and suction pump, the "Boss" double-action submerged force pump and the ordinary wood pumps. Besides the several pumps mentioned, the catalogue contains an illustration and description of Grove & Tubbs' water engine, which is a sort of combination of water engine and pump, its peculiarity being that it can be placed any distance from the lever or handle, which is worked like an ordinary pump, the force developed being transmitted to the engine by water-pipes. It is therefore recommended for mining purposes and similar operations. At the end of the catalogue is given a short list of pump fittings and sundries.

Fruit Dryers.

The seventeenth annual catalogue of the "Zimmerman Fruit Dryer" has just been issued by the Zimmerman Manufacturing Company of Cincinnati, Ohio and Burlington, Iowa. The catalogue contains cuts, descriptions and prices of five different types of dryers, varying in size from 20 to 200 square feet of drying surface, and weighing from 150 to 1100 pounds. The dryers are made almost entirely of galvanized iron, thus maintaining a clean and bright surface. Below the dryer is a furnace or stove having dampers at the bottom to regulate the admission of air, which, entering, is heated by contact with the furnace, then passed up among the fruit trays and out through a covered chimney at the top, thus producing a continuous upward current, which, in the large dryers, is increased by so connecting the smoke-pipe with the ventilating-pipe that the ascending current from the furnace helps the upward draft. The trays or racks of galvanized iron for holding the fruit rest upon ledges placed at the sides. The dryer is readily portable and may be used outdoors or inside where it can be connected with a chimney. The catalogue also contains a number of cuts, with descriptions, of

machines for preparing the fruit, besides devoting a number of pages to testimonials received from persons using their dryers. The Zimmerman Manufacturing Company further announce that they are authorized agents for the Howe scales, and are prepared to furnish them to their patrons at wholesale prices.

Charleston Industries.

Messrs. Hart & Co., importers of hardware, cutlery, bar iron, &c., of Charleston, S. C., have favored us with a copy of a recent publication entitled, "Charleston, Her Trade, Commerce and Industries," by John E. Land. This book contains an account of the commercial and manufacturing interests and agricultural resources of Charleston, besides a description of the climate and soil of the city and adjacent country. The first 70 pages are devoted to a historical sketch, showing the growth, importance and present condition of the commerce, manufactures and industries of Charleston. The remainder presents in detail the representative houses, giving a brief history of their growth, together with the management under which they at present carry on business. Any one desiring information concerning Charleston, more especially with reference to the extent and condition of her industries, will find much useful information contained in this book.

Sheffield, Ala.

The Alabama Improvement Association have issued a circular containing information in reference to the establishment of a large manufacturing city at Sheffield, Ala. A description of considerable length is given of the coal and iron fields lying in the Sheffield district, and the facilities for transportation of material by land and water. A special chapter of the pamphlet is devoted to the Great Warrior Coal Field, it being the report submitted by J. C. Killebrew to Maj. Thomas Peters, of Birmingham, Ala. The report contains tables giving a list of coal seams, their thickness and quality, together with a table of analyses of the different coals, which are claimed to average about the same as the Connellsville coal in composition. There are also given numerous analyses of iron ore and limestone, by Prof. N. N. Lord. Sheffield is located in Colbert County, at the head of navigation on the southern bank of the Tennessee River. The bluffs on which the city is to be built are over 100 feet high, overlooking the river, the surrounding country being a fertile agricultural region. South of the city site, at a distance almost continuously of from 18 to 60 miles, are the coal and iron beds. The pamphlet states that the rate of transportation of pig iron by boat to St. Louis is \$1 per ton. The sale of lots will begin on May 8, the lots to be sold at public auction to the highest bidder.

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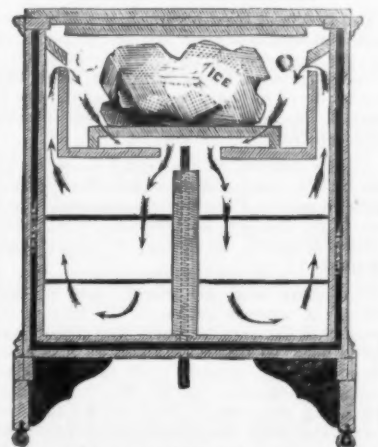
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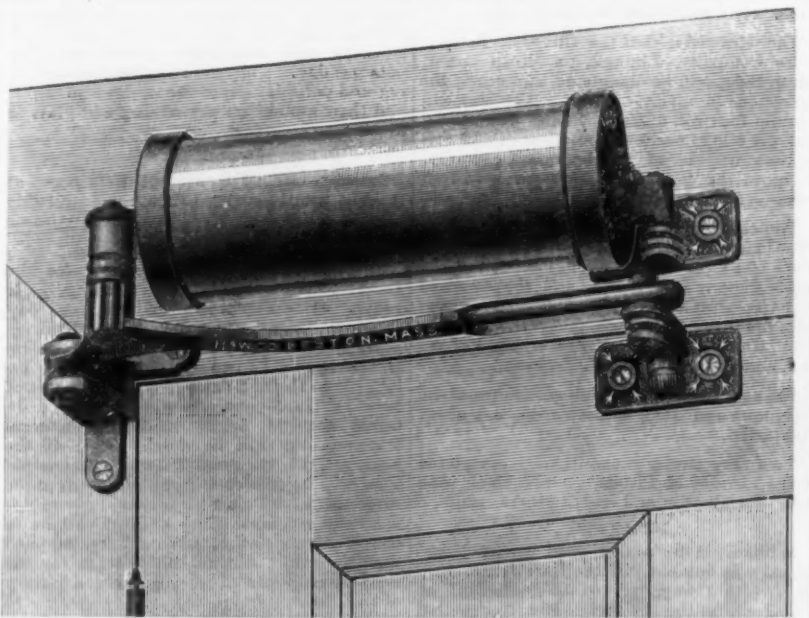


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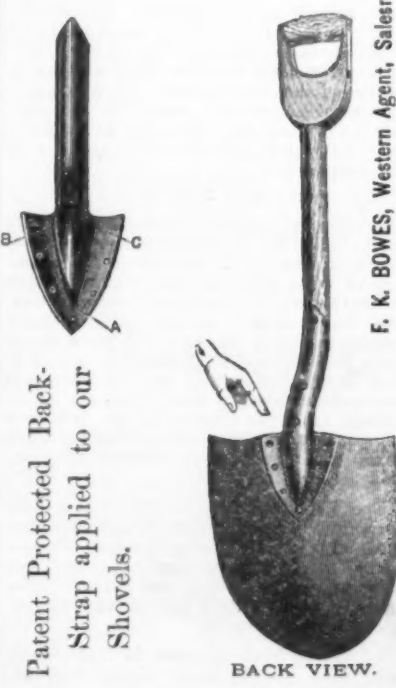
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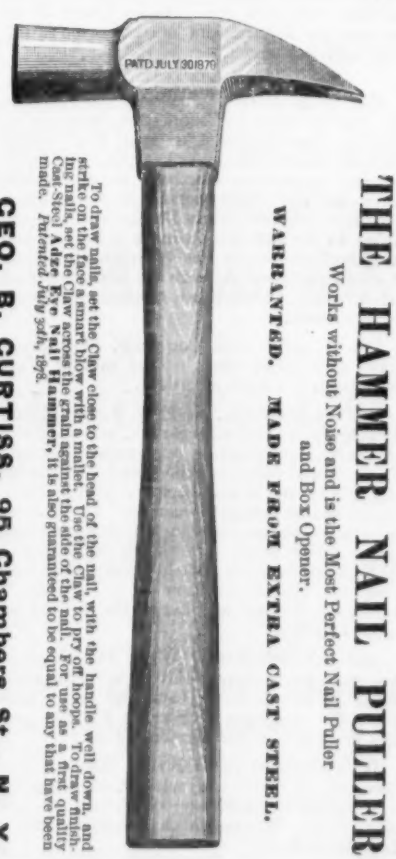
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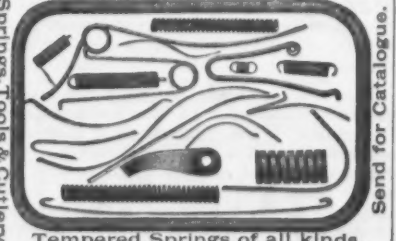
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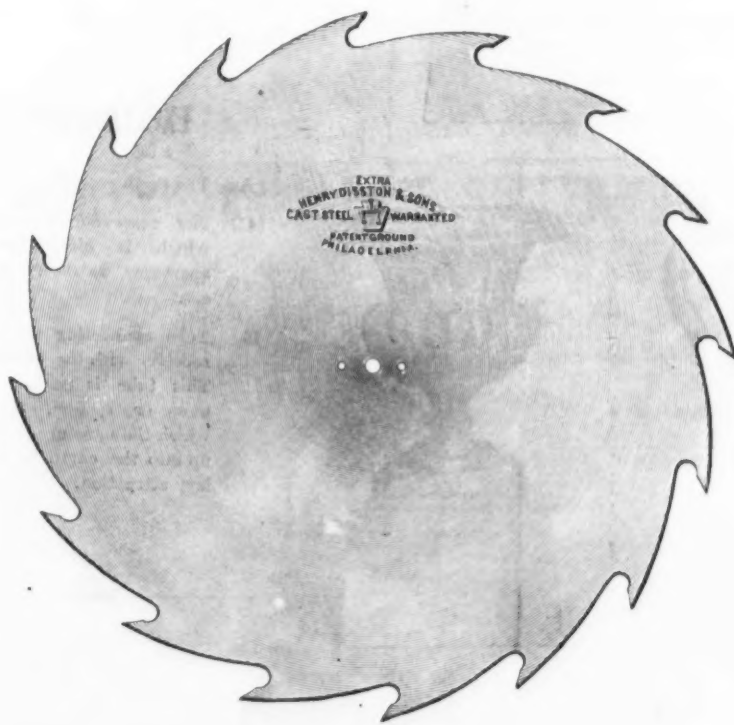
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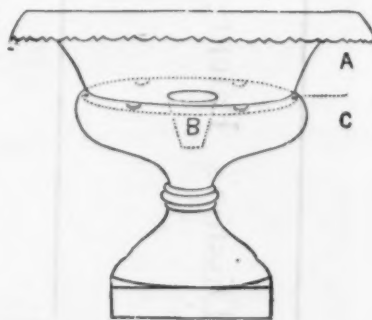
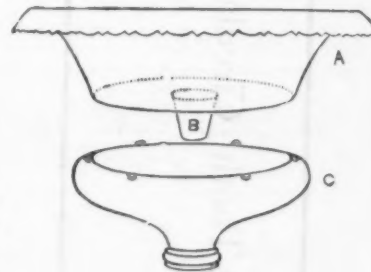


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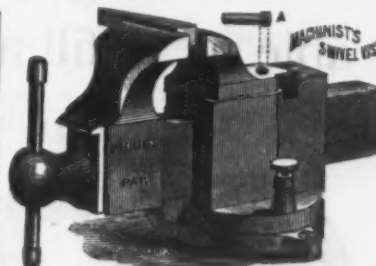
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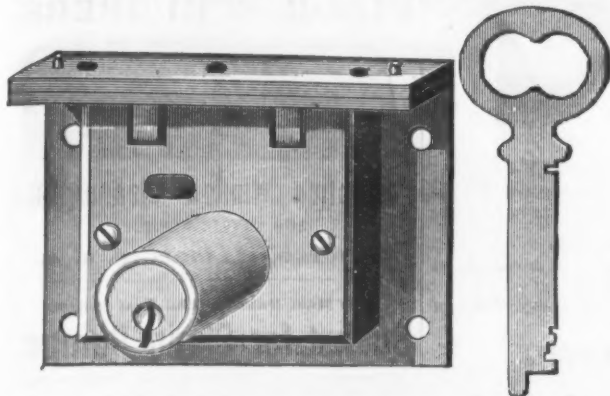
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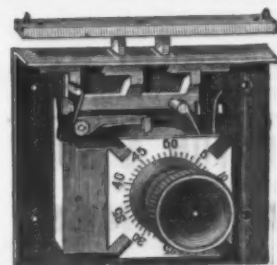
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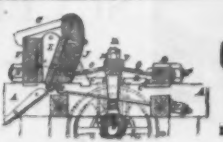
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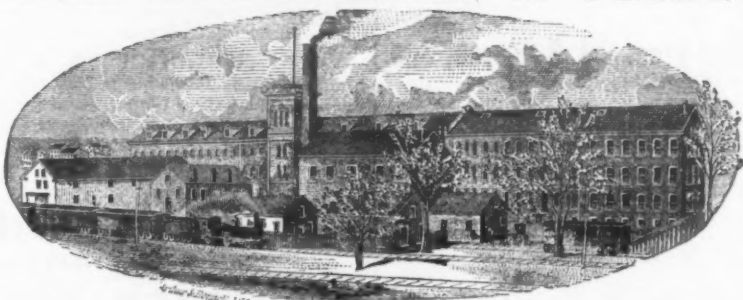
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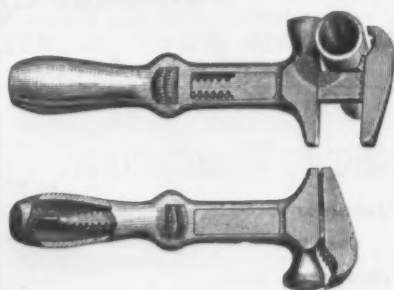
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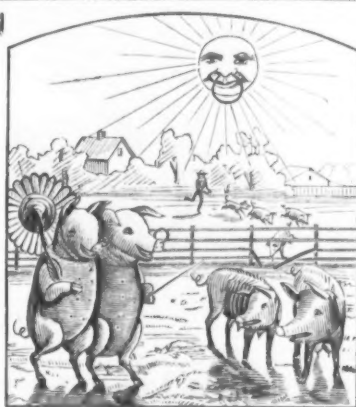
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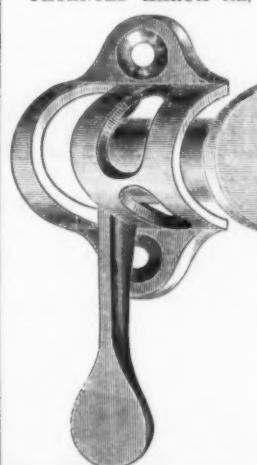
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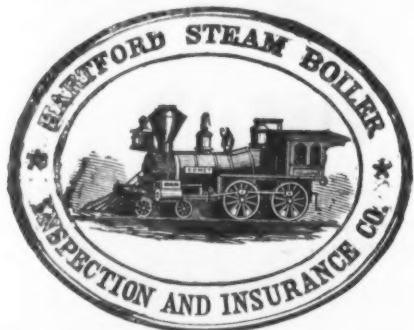
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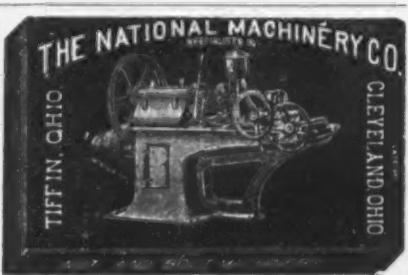
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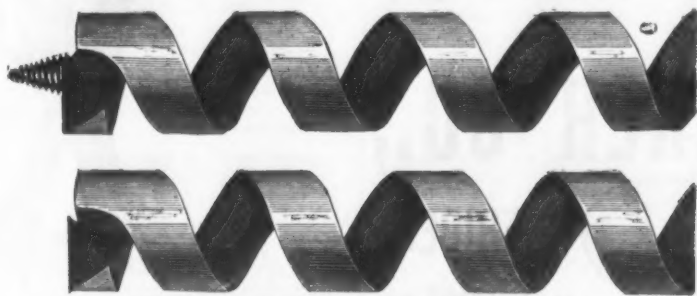
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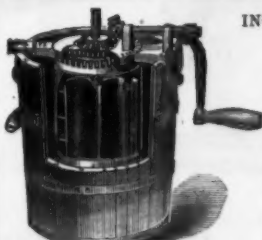
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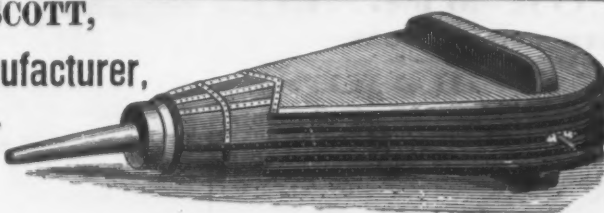
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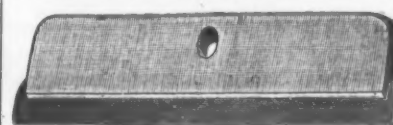


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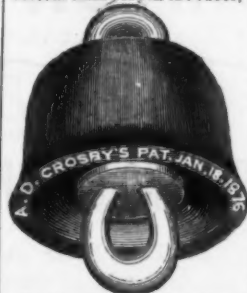
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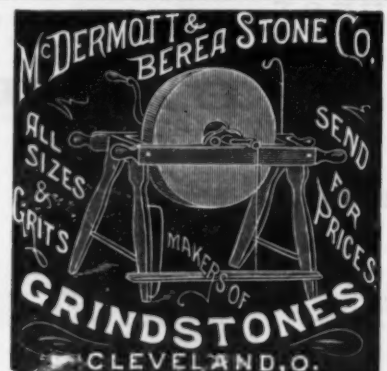
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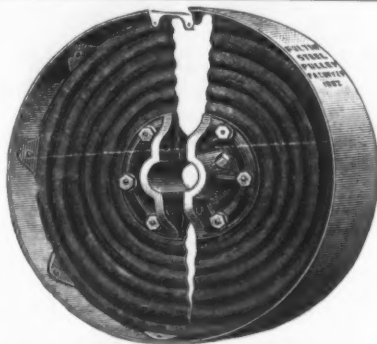
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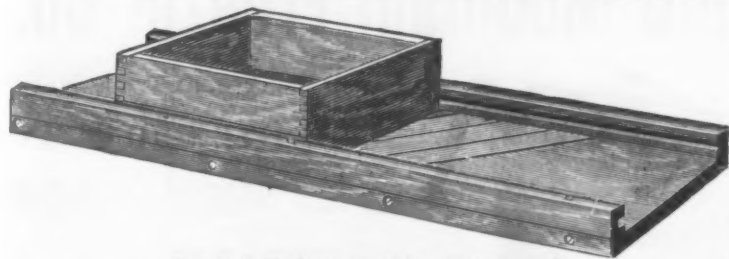
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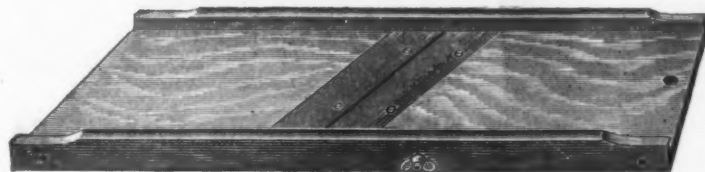
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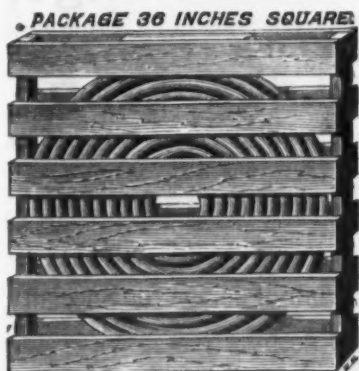
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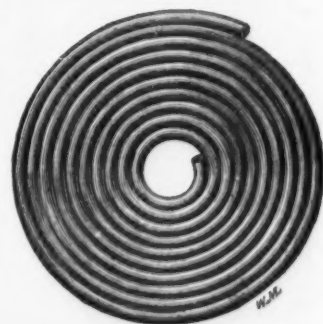


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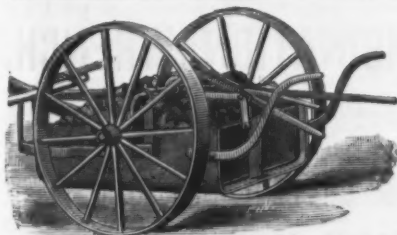
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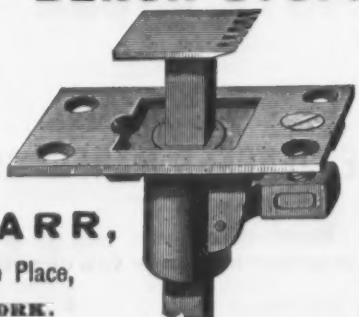


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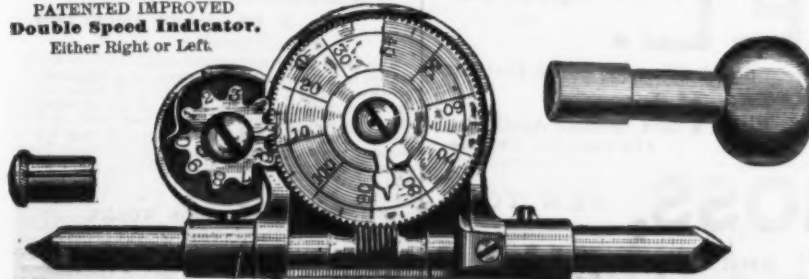
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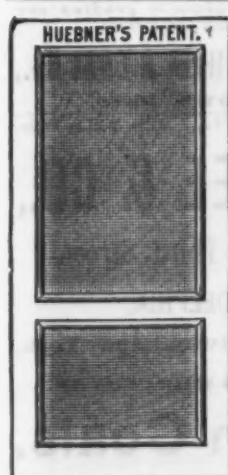
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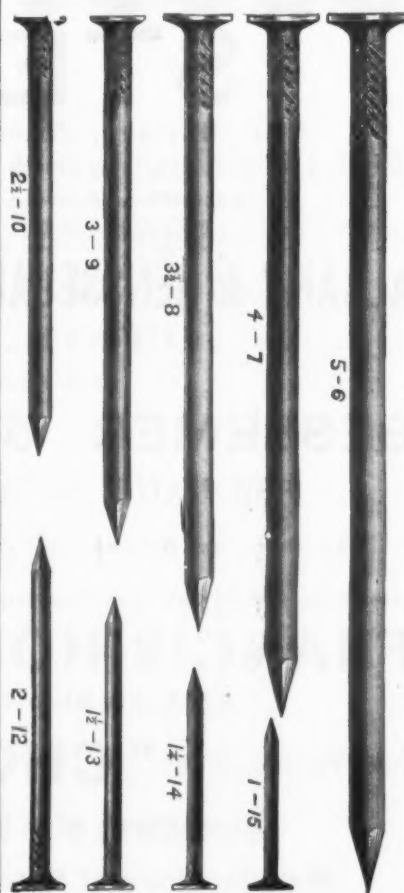
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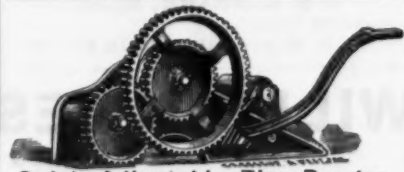
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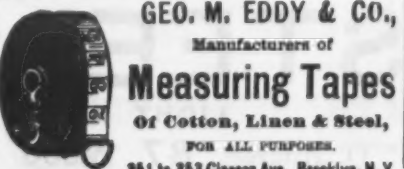
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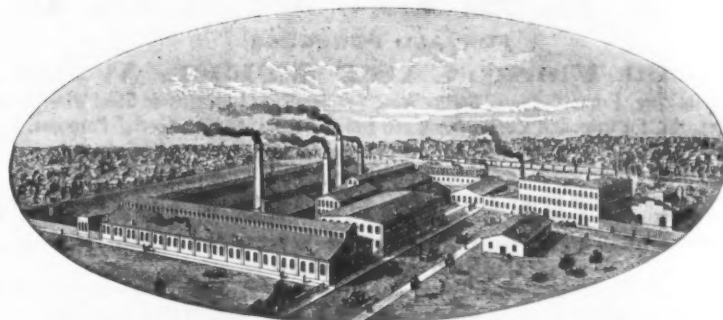
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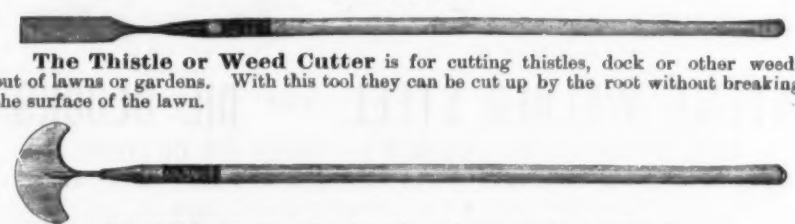


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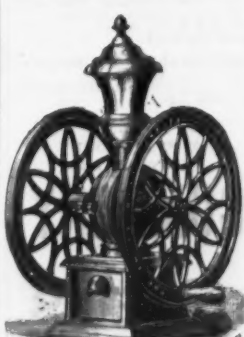
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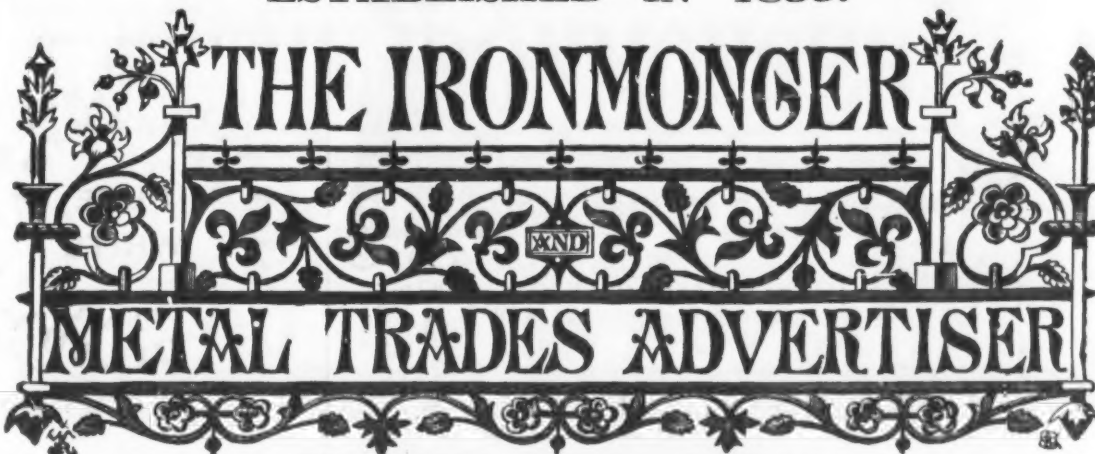
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NEW YORK.

Eighteenth Street Station Elevated R. R.

Illustrated Catalogue Mailed on Application.

ESTABLISHED IN 1859.



PUBLISHED EVERY SATURDAY.

THE OLDEST AND CHIEF REPRESENTATIVE OF THE IRON, HARDWARE AND METAL TRADES.

OFFICE: 42 CANNON STREET, LONDON, E. C.

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Special Correspondents.—The *Ironmonger* has a deserved reputation for its special correspondence from all the principal Continental, British and manufacturing centers. The writers are gentlemen holding important positions in the districts with which they are connected, and possess facilities for acquiring information specially suited for the columns of the *Ironmonger*. *The Week's Legal News, Trade Notes, Bankruptcies, Foreign Notes, Colonial Settings, Mercantile Circulars, &c.*, are each departments of the journal containing a digest of all matters of direct interest to the Iron, Hardware and Metal Trades. In addition to the above, there is a carefully classified list of Patents, together with Editorial Notes, French, Belgian and other Special Correspondence.

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With which is incorporated The Universal Engineer.

is published every fourth week in connection with the extensive and world-wide circulation of the *Ironmonger* itself. The dates of its publication for the next twelve months will be as follows:
MAY 24, JUNE 21, JULY 19, AUGUST 16, SEPTEMBER 13, OCTOBER 11, NOVEMBER 8, DECEMBER 6, 1884, JANUARY 3 and 31, FEBRUARY and 28, MARCH 28, 1885.

This supplement is published in

FOUR LEADING COMMERCIAL LANGUAGES

of the world, including English, and is sent to all the countries where they are spoken, thus placing the contents of the *Ironmonger* not only within reach, but in the native language of eighty millions of German, twenty-eight millions of Italian, and fifty-one millions of Spanish speaking people; or, in all, over two hundred millions of inhabitants in the principal nations where the best purchasers of manufactured goods are to be found.

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THE WHOLE FOREIGN HARDWARE TRADE,

so far as our experience of more than twenty years is concerned, will be covered by THE FOREIGN SUPPLEMENT at least twice a year. Thus a Price List or Advertisement inserted in the *Ironmonger* and FOREIGN SUPPLEMENT is a strikingly powerful and most efficient way of publicity, not to be compared with any of the other ordinary channels of communication.



THE SAMSON UPWARD FILTERS!

Is the Best, the Simple
and most Portable

WIRE
STRETCHER

in the Market.

Line of Draft direct; always Self-Adjusting; Rigid Double Handle; Double Pawl; it works at either end of the fence, at either side of the post and either side up.

LIGHT, PORTABLE, SIMPLE, SURE.
For sale by all leading wholesale Jobbing Hardware Houses and Barb Wire men in the United States.

MANUFACTURED ONLY BY

SAMSON NOVELTY WORKS, Nos. 14 & 16 Main St., De Kalb, Ills.

AND IN CANADA BY

BULLOCK HARDWARE CO., Otterville, Ontario.



Self-Cleansing.
No Repacking.

THE MOST
EFFICIENT,
DURABLE,
ORNAMENTAL,
SALEABLE
AND
THE BEST FILTERS

in the market are
manufactured by

THE STEVENS FILTER CO., TOLEDO, OHIO.

Liberal Discount to the trade. Send for Prices.

FRUIT WINE
& JELLY PRESS
SAUSAGE STUFFER
MOLASSES
SELF MEASURING FAUCET
ENTERPRISE MFG. CO.
THIRD & DAUPHIN STS. PHILADELPHIA
Mrs. Potts' COLD HANDLE SADD IRONS
SMOKED BEEF SHAVES
MEAT CHOPPER
BUNG HOLE BORER
TOBACCO & ROOT CUTTER

MERCHANT & CO.,
 525 ARCH STREET, Philadelphia. 90 BEEKMAN STREET, New York.
ELECTRICAL COPPER WIRE,
 BARE AND INSULATED, FOR
 Magnets, Office Wire, Annunciators, Electric
 Lights, Telephone, Telegraph, &c.
 BATTERY COPPER, STRIP, RODS, &c. ZINC PLATES AND RODS,
 SEAMLESS BRASS AND COPPER TUBING.

WROUGHT IRON TACKLE BLOCKS.
 Swivel Hooks for Rope or Chain,
 POLISHED GROOVES, ALL SIZES IN STOCK.
 Also Pulley Blocks for Wire Rope,
 Headquarters for the
IRVING BRAND WOODEN PULLEY BLOCKS,
MCCOY & SANDERS, Manufacturers,
 26 Warren Street, New York.

CLEVELAND BLOCK CO.,
 MANUFACTURERS OF
TACKLE BLOCKS
 WITH
MALLEABLE IRON SHELLS.
 As compared with Wooden Blocks, these are Stronger,
 Lighter, Simpler, more ship-shape, vastly more durable,
 cheaper, and have wider scores. They have all the advantages
 of Wrought Iron Blocks, and more, at much less cost. Illus-
 trated Catalogues mailed from
 129 River St., Cleveland, Ohio,
 or from New York Warehouse, 100 Chambers St., HORACE F. RISE,
 Agent; DODGE, HALEY & CO., 45 Oliver St., Boston; GOULD &
 ALSTIN, 165 Lake St., Chicago.

THE CINCINNATI CORRUGATING CO.,
 CINCINNATI, OHIO.
CORRUGATED SHEET IRON.
 For Rolling
 Mills, Blast Furnaces,
 Foundries, Machine
 Shops, Car Shops, Boiler
 and Engine Rooms, Etc.
 Fire, Water and Wind Proof. Light, Cheap and Durable.
 Send for Descriptive Illustrated Catalogue.

J. M. STUTZMAN,
 181 William Street, NEW YORK.
STEEL NAME STAMPS.
 Steel Alphabets,
 Die Letters for Seal Engravers,
 BRANDS, SEALS,
 POSTMARKERS,
 Door Plates.
 Steel Stencil-Cutting Dies, Soap Moulds and Brass Stamps.
 SEND FOR PRICE LIST.

HAIGHT & CLARK,
 ALBANY, N. Y.,
 MANUFACTURERS OF FINE GRAY IRON CASTINGS,
 ORNAMENTAL AND ART CASTINGS
 OF EVERY DESCRIPTION.
 Rosettes and Pickets for Wire Workers. Castings for Furniture and Piano Manufacturers. Stove and
 Metal Patterns of all kinds a specialty. Correspondence solicited.
JAPANING. NICKEL PLATING. BRONZING.

JOHN T. LEWIS & BROS.,
 No. 231 South Front St.,
 PHILADELPHIA.



TRADE MARK.
 MANUFACTURERS OF
 Pure White Lead, Red Lead, Litharge,
 Orange Mineral, Linseed Oil,
 AND PAINTERS' COLORS.

JOHN JEWETT & SONS
 Manufacturers of the well-known brand of
WHITE LEAD.



TRADE MARK.
 ALSO MANUFACTURERS OF
LINSEED OIL.
 181 Front Street, NEW YORK.



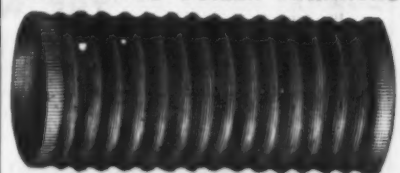
The Atlantic White Lead and Linseed Oil Co.,
 Manufacturers of
 White Lead (Atlantic), Red Lead, Lith-
 arge, Glass Makers' Litharge and
 Orange Mineral;
LINSEED OIL,
 Raw, Refined and Boiled.
ROBERT COLGATE & CO.,
 287 Pearl St., NEW YORK.

SALEM LEAD COMPANY,
 CORRODERS AND MANUFACTURERS OF
PURE WHITE LEAD.



ALSO MANUFACTURERS OF
 Lead Pipe and Narrow Sheet Lead.
SALEM, MASS.
 F. A. BROWN, Treas.

FOX'S
CORRUGATED BOILER FURNACES.



1. They are made of a single steel plate, welded
 at the bottom, with no joint in contact with the
 flame.
 2. They give 50 per cent. more evaporative
 power.
 3. They throw off all scale by their elasticity.
 4. They do not destroy themselves by the vari-
 ation of temperature, contracting and expanding
 as they do like an accordion. They have not
 enough stiffness to work against the boiler heads.
 5. They require, to comply with the rules of the
 Board of Trade in England, only one-half the
 thickness of plate of plain furnaces for equal
 working pressure.
 6. Where a plain furnace of equal length, diam-
 eter and thickness collapsed at 225 pounds, the
 Corrugated stood 1000 pounds per square inch.
 Since five years 700 steamers were fitted with
 these furnaces, among them the Alaska, Oregon,
 City of Rome, Servia, Elbe, Werre, Fulda, &c.
 Perfect safety and greatest economy combined.
 For particulars, apply to
Hartmann, Le Doux & Maecker,
 134 PEARL ST., NEW YORK,
 Sole Agents and Assignees of U. S. Patents.



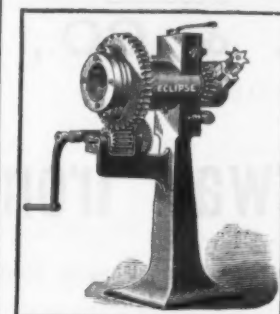
Prouty's Patent
PEERLESS
FORCE PUMP.

Has Self-Adjustable Foot Rest.
 NEW AUTOMATIC COMPENSATING
 PACKING.

It will throw a continuous jet FROM
 FORTY TO SIXTY FEET. A new pattern
 jet and spray nozzle is sent with each
 pump.

Especially attention is called to the
 material and workmanship exhibited
 in these pumps.

THE NEW ENGLAND BUTT CO.
PROVIDENCE, R. I.
 NEW YORK OFFICE, 99 Chambers St.



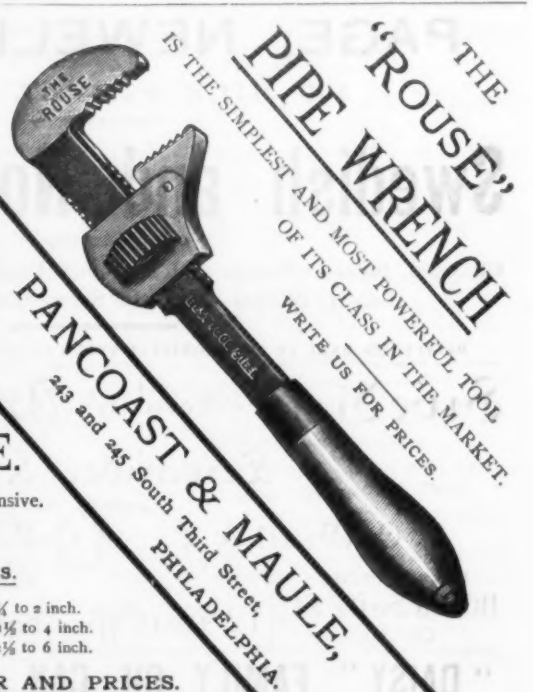
THE "ECLIPSE"
HAND
PIPE MACHINE.

Simple, powerful, portable, inexpensive.
 With it one man can easily
 cut 6-inch Pipe.

MADE IN THREE SIZES.

No. 1.—CUTS AND THREADS 1/4 to 2 inch.
 No. 2.—CUTS AND THREADS 2 1/2 to 4 inch.
 No. 3.—CUTS AND THREADS 4 1/2 to 6 inch.

SEND FOR CIRCULAR AND PRICES.



CAST IRON
Furnace Lamps
 which are superseding entirely the Tin Lamps
 wherever introduced, in consequence of their dur-
 ability. They are now extensively used in the
 Iron Districts of Ohio and some in Pennsylvania.
 We call your attention to and solicit your order
 for them, confidently asserting that they are an
 A No. 1 article in every respect.



Sample sent if desired.
 PRICE, \$12 PER DOZEN.

The Taylor & Boggis F'dry Co.,
 CLEVELAND, O.

V. G. HUNDLEY,
 PROPRIETOR OF
NORTH CAROLINA HANDLE CO.



MANUFACTURER OF
Handles and Spokes,
 79 Reade Street and 97 Chambers Street, NEW YORK
 HARDWARE COMMISSION MERCHANT.

SHEET-IRON BUILDING MATERIALS.

ROOFING. Patent Cap Seam Roofing, in Four Styles. In Sheets
 or Rolls.
SIDING. Crimped Iron, for Siding or Roofing for Elevators,
 Mills and Factories.
CEILING. Paneled and Crimped Iron Ceiling. Durable, Attractive,
 Fire-proof.

Send for Prices and Circulars to
A. NORTHROP & CO., 97 First Ave., PITTSBURGH.

May 8, 1884.

PHILADELPHIA.

Lloyd & Supple Hardware Co.

Terms, 30 days. For 60 or 90 days, interest added at 10% per cent. per annum.

Avails.
 Peter Wright's, # 11 @ 11 1/2¢
 Over 200 B. 11 1/2¢
 Trenton 10¢
 Eagle Anvil & Kentucky, 10¢
 Apple Parers.
 Globe Apple Parer, # 5.50 net
 Penn Apple Parer, # 5.50 net
 Lots of 10 to 25 dozen, special prices.

Axes.
 Hunt's Kentucky and Yankee, # doz. net, \$7.25
 Robert Mann, # doz. net, 7.25
 Richard Chief, 7.25
 Beveled Axes, # doz. net, \$12.50
 Double Bit Axes, net, \$12.00
Augers and Auger Bits.—New List, January 7, 1884.

Augers.
 Bates' Nut Augers, # doz. net, \$11.50
 Cook's Augers, # doz. net, \$11.50
 Watson's Ship Augers, # doz. net, \$11.50
 Benjamin Pierce Auger Bits, # doz. net, \$11.50
 Griswold Auger Bits, # doz. net, \$11.50
 Cook's Auger Bits, # doz. net, \$11.50
 Jennings' Auger Bits, new list, Jan. 1, 1884, # doz. net, \$11.50
 Bonney's Pat. Hol. Augers, list #48 # doz. net, \$25.10
 Stearns' Pat. Hol. Augers, list #48 # doz. net, \$25.10

Balances.
 Light and Common, # doz. net, \$4.00
 Heavy, # doz. net, \$4.00

Bells.
 Berlin Bros. Mfg. Co. Light Hand Bells, # doz. net, \$10.00
 Swiss Pattern Hand Bells, # doz. net, \$10.00
 Connelley's Hand Bells, # doz. net, \$10.00
 (S. Western & Kentucky Cow, new list, # doz. net, \$10.00)

Boring Machines.
 Upright, without Augers, # doz. net, \$5.50
 Angular, without Augers, # doz. net, \$5.50
 Philadelphia Carriage Bolts, # doz. net, \$5.50

Braces.
 Barber's, # doz. net, \$4.00
 Ruckus, # doz. net, \$4.00
 Spoonford, # doz. net, \$4.00
 American Ball, # doz. net, \$4.00

Butts.
 Cast Fast Joint, Narrow, # doz. net, \$10.00
 Cast Loose Joint, Narrow, # doz. net, \$10.00
 Cast Loose Joint, Broad, # doz. net, \$10.00
 Cast Acorn, Loose Pin, # doz. net, \$10.00
 Cast Acorn, Japanese, # doz. net, \$10.00
 Cast Mayer's Loose Joint, # doz. net, \$10.00

Wrought Table Frames and Base Plates.
 Wrought Narrow Fast, # doz. net, \$10.00
 Wrought Loose Joint, # doz. net, \$10.00

Blind Butts.
 Parker, # doz. net, \$10.00
 Clark, # doz. net, \$10.00
 Shepard, # doz. net, \$10.00
 Lull & Porter, # doz. net, \$10.00
 Huffer's, # doz. net, \$10.00

Chains.
 German, # doz. net, \$10.00
 11, 1881, # doz. net, \$10.00
 Galvanized Pump, # doz. net, \$10.00
 Best Proof Chain, # doz. net, \$10.00

Chisels.
 Socket Framing, # doz. net, \$10.00
 Socket Firmer, # doz. net, \$10.00
 Butcher's, # doz. net, \$10.00
 Casters, # doz. net, \$10.00

Claws.
 Bed (new list July 1, 1880), # doz. net, \$10.00
 Plate, # doz. net, \$10.00
 Coffee Mills, # doz. net, \$10.00

Coffers.
 Box and Side (new list Jan. 1, 1880), # doz. net, \$10.00
 Enterpriser, # doz. net, \$10.00

Cutlery.
 Walden Pocket, # doz. net, \$10.00
 Pennsylvania Knife Co., # doz. net, \$10.00
 Landers, Frary & Clark, # doz. net, \$10.00
 Goodnow Mfg. Co. and Meriden Cutlery Co., # doz. net, \$10.00

Drawing Knives.
 Hart Mfg. Co., # doz. net, \$10.00
 Adjustable Handle, # doz. net, \$10.00

File Pans.
 Flannel, # doz. net, \$10.00
 No. 1, # doz. net, \$10.00
 No. 2, # doz. net, \$10.00
 No. 3, # doz. net, \$10.00

Files.
 Nicholson, # doz. net, \$10.00
 Disston, # doz. net, \$10.00

Fluting Machines.
 Eagle, # doz. net, \$10.00
 Eagle, # doz. net, \$10.00
 Crown, # doz. net, \$10.00
 Crown, # doz. net, \$10.00

Hammer.
 Yerkes & Plumb, new list, # doz. net, \$10.00
 Mayfield Hammer, # doz. net, \$10.00
 Howell A. E. Nail Hammer, # doz. net, \$10.00

Handles.
 Disston Loop Handles Cross Cut, # doz. net, \$10.00
 Boynton Loop Handles Cross Cut, # doz. net, \$10.00

Hatchets.
 Yerkes & Plumb, new list, # doz. net, \$10.00
 Hunt, # doz. net, \$10.00

Hinges.
 Strap and T, # doz. net, \$10.00
 Horse Nails, # doz. net, \$10.00
 Globe, # doz. net, \$10.00
 Vulcan, # doz. net, \$10.00

Hooks.
 Ausable, # doz. net, \$10.00
 " Polished, # doz. net, \$10.00
 " Blued & P'd, # doz. net, \$10.00
 Clinton, # doz. net, \$10.00

Iron.
 Polished & P'd, # doz. net, \$10.00
 Saranac, # doz. net, \$10.00
 Hay and Straw Knives, # doz. net, \$10.00

Lighting.
 Electric, # doz. net, \$10.00
 Wadsworth, # doz. net, \$10.00
 Walton Straw Knives, # doz. net, \$10.00

Locks and Keys.
 Branford, # doz. net, \$10.00
 Gaylord Cabinet, # doz. net, \$10.00
 Parker's Cabinet, # doz. net, \$10.00
 American Padlocks, # doz. net, \$10.00

Meat Cutters.
 Scandianavian Padlocks, # doz. net, \$10.00
 No. 1, # doz. net, \$10.00
 No. 2, # doz. net, \$10.00
 No. 3, # doz. net, \$10.00

Lanterns.
 Buckeye, # doz. net, \$10.00
 Tubular, # doz. net, \$10.00
 Guards, # doz. net, \$10.00

Lawn Mowers.
 Pennsylvania, # doz. net, \$10.00
 Philadelphia, # doz. net, \$10.00
 Excelsior, # doz. net, \$10.00

Lawn and Garden Pumps.
 Holland Patent, # doz. net, \$10.00
 Long and Short Cut, # doz. net, \$10.00
 Pennsylvania Pattern, # doz. net, \$10.00

Machines.
 Enterprise Mfg. Co.'s Measuring Faucets, # doz. net, \$10.00
 Stebbins' Gates, # doz. net, \$10.00
 Lincoln's Gates, # doz. net, \$10.00

Meat Cutters.
 Landers, Frary & Clark, # doz. net, \$10.00
 Brass Liquor Cocks, new list Jan. 1, 1880, # doz. net, \$10.00
 Cork and Cocks, # doz. net, \$10.00

Meat Cutters.
 Dixon's, # doz. net, \$10.00
 Woodruff, # doz. net, \$10.00
 Stowe, # doz. net, \$10.00
 Hale's, # doz. net, \$10.00

Meat Cutters.
 American, # doz. net, \$10.00
 Stuffers, # doz. net, \$10.00
 Enterprise Stuffers, # doz. net, \$10.00
 Planes, # doz. net, \$10.00

Meat Cutters.
 Sandusky Tool Co., # doz. net, \$10.00
 Ohio and Auburn, # doz. net, \$10.00
 Bailey & L. Co., # doz. net, \$10.00
 Plane Irons, # doz. net, \$10.00

Meat Cutters.
 Ohio Tool Co., # doz. net, \$10.00
 Butcher's, # doz. net, \$10.00
 Plumbs and Levels, # doz. net, \$10.00

Meat Cutters.
 Stanley's Adjustable, # doz. net, \$10.00
 Stanley's Non-Adjustable, # doz. net, \$10.00
 Rakers, # doz. net, \$10.00

Meat Cutters.
 New List, # doz. net, \$10.00
 Razor Straps, # doz. net, \$10.00
 Lamont Combination, # doz. net, \$10.00

Meat Cutters.
 Lamont Combination, # doz. net, \$10.00
 Imitation Emerson, # doz. net, \$10.00
 Rules, # doz. net, \$10.00

Meat Cutters.
 Stanley Boxwood, # doz. net, \$10.00
 Stanley Iron, # doz. net, \$10.00
 Steady Iron, # doz. net, \$10.00

Meat Cutters.
 Per doz., # doz. net, \$10.00
 American Pattern, # doz. net, \$10.00
 Per doz., # doz. net, \$10.00
 Lbs., # doz. net, \$10.00

Meat Cutters.
 Squares, # doz. net, \$10.00
 Steel and Iron, # doz. net, \$10.00
 Try Squares, Stanley, # doz. net, \$10.00
 Disston's Try Squares, # doz. net, \$10.00

Meat Cutters.
 Seydies, # doz. net, \$10.00
 Golden Clipper, Damascus Blade, Boxed and Sharpened, # doz. net, \$10.00
 Clipper No. 10, Boxed Blade, Boxed and Sharpened, # doz. net, \$10.00

Meat Cutters.
 Sharpened, # doz. net, \$10.00
 Clipper No. 6, Painted Red, Boxed and Sharpened, # doz. net, \$10.00
 Saws, # doz. net, \$10.00

Meat Cutters.
 Disston's Hand, Panel and Rip, # doz. net, \$10.00
 Disston's Circular, # doz. net, \$10.00
 Cross-Cut No. 2, Plain, # doz. net, \$10.00
 Cross-Cut Patent Tooth, # doz. net, \$10.00

Meat Cutters.
 Cross-Cut Champion Tooth, # doz. net, \$10.00
 Boynton's Lightning Buck Saw, Cross-bar, # doz. net, \$10.00
 Shovels and Spades, # doz. net, \$10.00

Meat Cutters.
 Oliver Ames & Sons, new list, # doz. net, \$10.00
 Griffiths, # doz. net, \$10.00
 Howland, # doz. net, \$10.00
 And Irons, # doz. net, \$10.00

Meat Cutters.
 Mrs. Fotts' Patent, # doz. net, \$10.00
 Shovels, # doz. net, \$10.00
 Washita Extra, # doz. net, \$10.00
 Washita No. 1, # doz. net, \$10.00

Spoons.
 Plated, # doz. net, \$10.00
 German Silver, # doz. net, \$10.00
 Britannia, Boardman's, # doz. net, \$10.00
 Britannia, Parker's, # doz. net, \$10.00
 Tinned, # doz. net, \$10.00
Spring.
 Torrey, # doz. net, \$10.00
 Gen No. 3 small Japanese, # doz. net, \$10.00
 Gen No. 2 medium Japanese, # doz. net, \$10.00
 Coil No. 10 # gross net, \$10.00
 Other Standard Springs, # doz. net, \$10.00
 Warner Door Springs, # doz. net, \$10.00
 Standard Spring Hinges, # doz. net, \$10.00

Stocks and Dies.
 Single No. 1, # doz. net, \$10.00
 Single No. 2, # doz. net, \$10.00
 Other Standard Spring Hinges, # doz. net, \$10.00

Stove Polish.
 Gem, # doz. net, \$10.00
 Fire Fly, # doz. net, \$10.00

Tacks.
 # doz. net, \$10.00
 Double Pointed Tacks, # doz. net, \$10.00

Traps.
 Genuine Onells-Newhouse, # doz. net, \$10.00
 Onells-Newhouse list, # doz. net, \$10.00

Vises.
 Solid Box, Trenton new list, # doz. net, \$10.00
 Wrenches, # doz. net, \$10.00

Wires.
 Bright or Annealed, No. 0 to 18, # doz. net, \$10.00
 Bright or Annealed, No. 27 to 36, # doz. net, \$10.00
 Coppered, 0 to 18, # doz. net, \$10.00
 Tinned Brown Wire, # doz. net, \$10.00

Wringers.
 Peerless No. 2, # doz. net, \$10.00
 Universal No. 2, # doz. net, \$10.00
 Novelty No. 2, for common tubs, # doz. net, \$10.00
 Excelsior E, for stationary tubs, # doz. net, \$10.00

PITTSBURGH.

Merchant Iron.
 Terms.—Note or acceptance at 60 days, with current rate of exchange on New York or discount of 2% per cent. for cash, if remitted within 10 days from date of invoice.

For fluctuations and discounts on card rates see weekly Pittsburgh Trade Report.
 The following are card rates:

Flat Bar.
 1 1/2 to 4 by 1/2 to 1 inch, # doz. net, \$10.00
 4 to 6 by 1/2 to 1 inch, # doz. net, \$10.00

Rounds and Squares.
 1 to 1 1/2, # doz. net, \$10.00
 1 1/2 to 2, # doz. net, \$10.00

Half Cent and Half Round.
 1/2 to 1 1/2, # doz. net, \$10.00
 1 1/2 to 2, # doz. net, \$10.00

Horse Shoe.
 1/2 to 1 1/2, # doz. net, \$10.00
 1 1/2 to 2, # doz. net, \$10.00

Hoop Iron.
 1/2 to 1 1/2, # doz. net, \$10.00
 1 1/2 to 2, # doz. net, \$10.00

Light Bands.
 1/2 to 1 1/2, # doz. net, \$10.00
 1 1/2 to 2, # doz. net, \$10.00

Hoop Iron.
 1/2 to 1 1/2, # doz. net, \$10.00
 1 1/2 to 2, # doz. net, \$10.00

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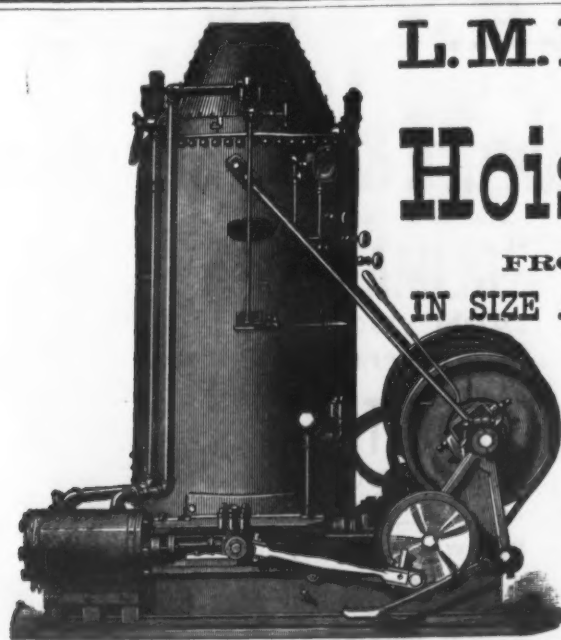
Hoop Iron.
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Hoop Iron.
 1/2 to 1 1/2, # doz. net, \$10.00
 1 1/2 to 2, # doz. net, \$10.00

Nails.
 See Pittsburgh Trade Report.
Best Quality Refined Cast Steel.
 Square, Flat, Octagon and Round.
 1/2 to 2 inches, inclusive, # doz. net, \$10.00
 2 to 3 inches, # doz. net, \$10.00
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 4 to 5 inches, # doz. net, \$10.00
 5 to 6 inches, # doz. net, \$10.00
 6 to 8 inches, # doz. net, \$10.00
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 94 to 96 inches, # doz. net, \$10.00
 96 to 98 inches, # doz. net, \$



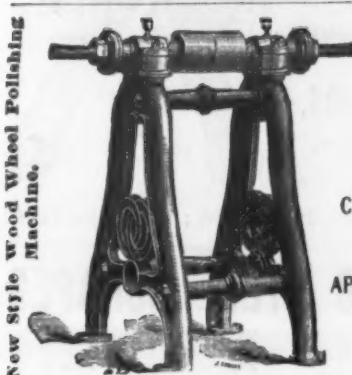
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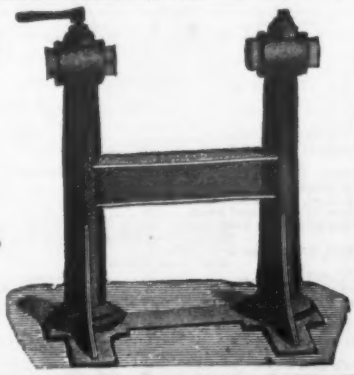
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Plates 1 1/2 inch thick to No. 14.
CAPACITY, 30 feet long,
70 inches wide.

No. 1 Carries 7 feet earth.
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Steel Scraper

The Lightest and Strongest Scraper made. The body is made of one single piece of steel. The
handles are fastened inside of fold, and free from all obstructions. The body, handle and runners
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A represents the Station-
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Block; C the Operating
Rod; D the Lower Brack-
et; E the Lifting Arm; F
the Transom Bracket.

With this Adjustable
Locking Bar and Lift-
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the transom can be made
larger or smaller without
the least inconvenience.

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1/4 in., 5/16 in. and 3/8 in.

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The best in the world. Manufactured by GEO. W.
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MANUFACTURERS OF EVERY VARIETY OF
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GOODS MADE TO SAMPLE.

Also, Fine Swedes Iron Tacks for Upholsters'
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Reported by Bigelow & Dore.

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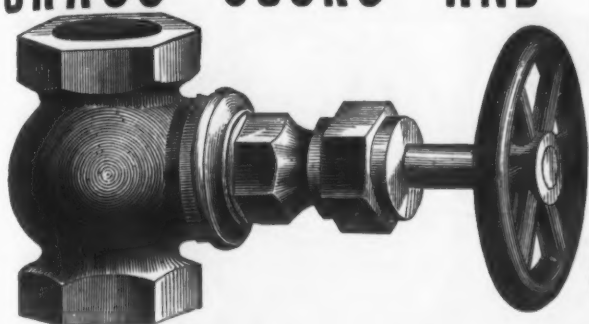
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For STEAM,
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Wrought Iron
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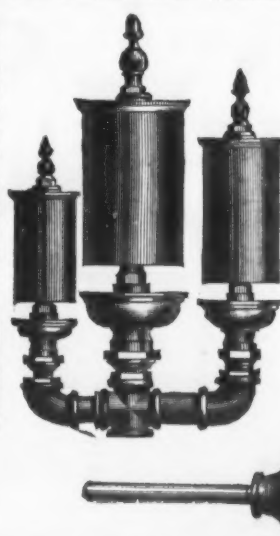
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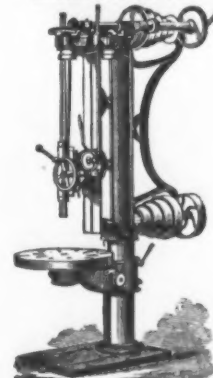


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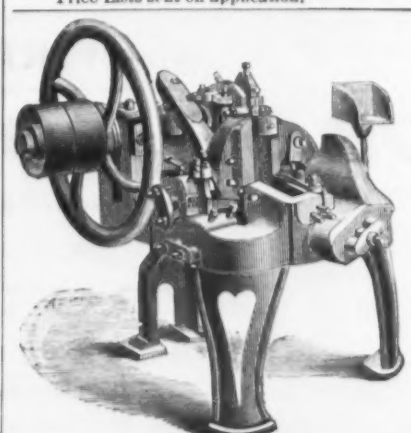
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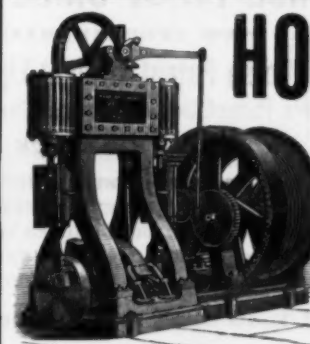
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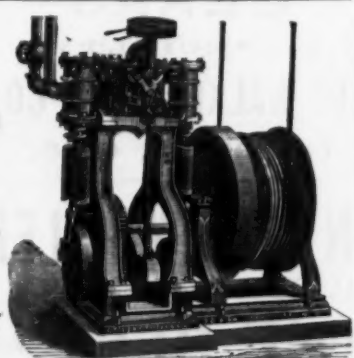
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Standard, Hydraulic and Steam

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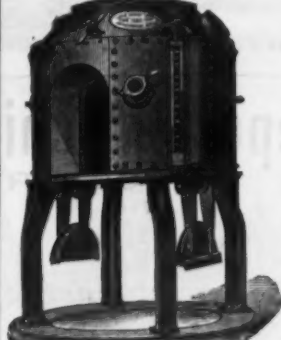


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Made in six sizes, with capacity from one to fifteen tons per hour.
Adapted to all classes of work, for light or heavy castings, and ex-
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Write for estimates and mention this paper.

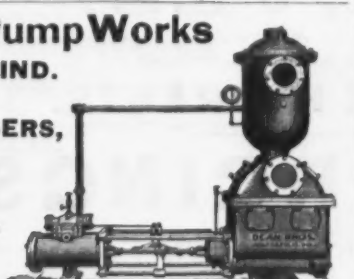


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BOILER FEEDERS,
AIR PUMPS AND CONDENSERS,
DUPLEX PUMPS,
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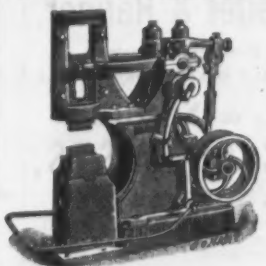
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SIMPLE, PRACTICAL AND LOW-PRICED.

This Hammer is of an entirely new design and adapted to all
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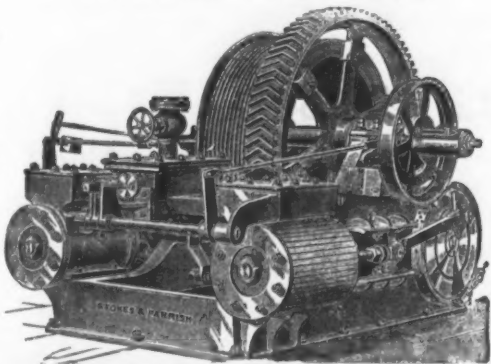
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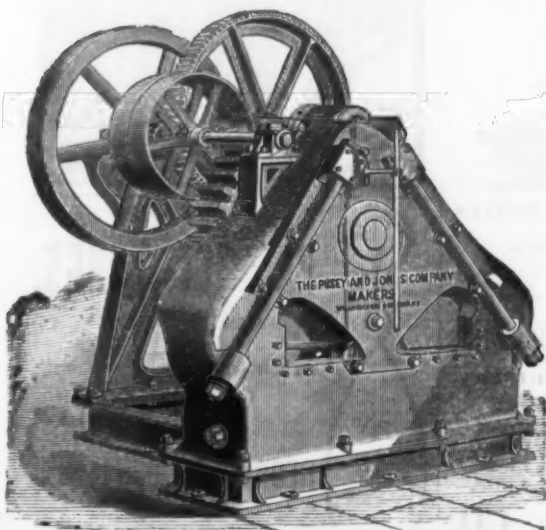
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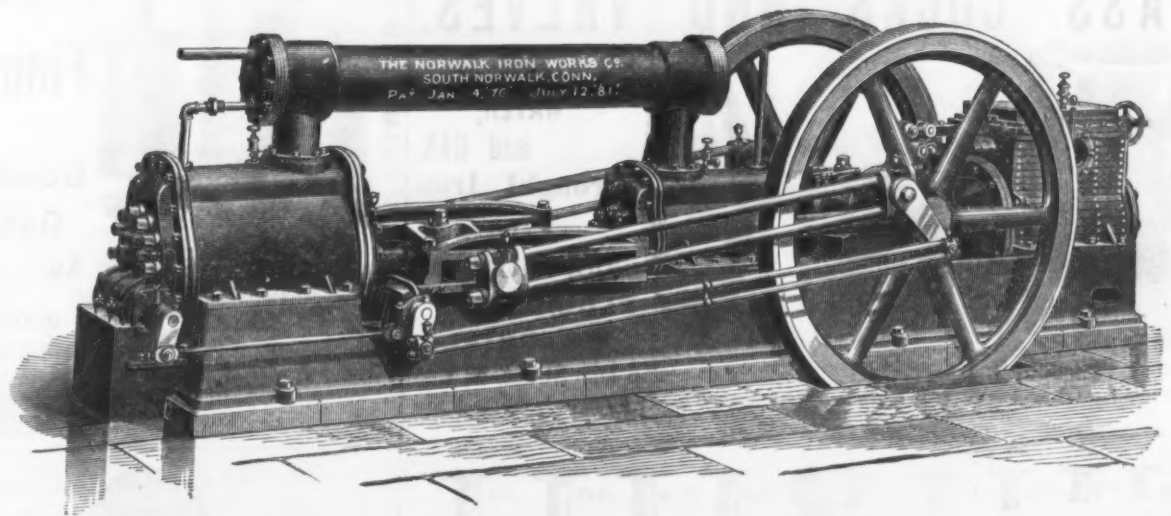
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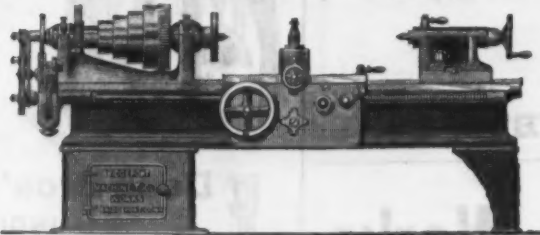
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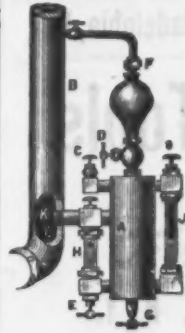
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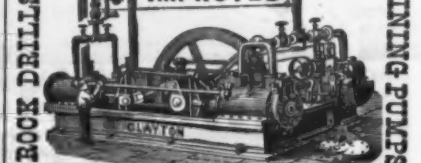
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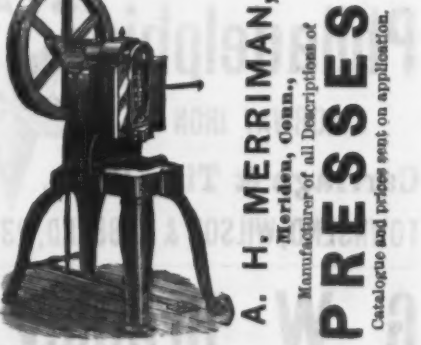
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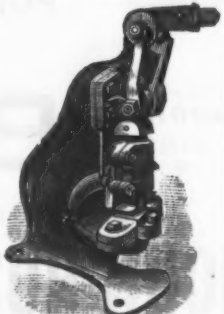
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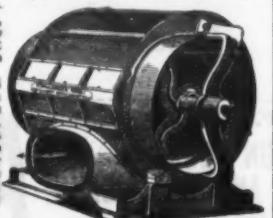
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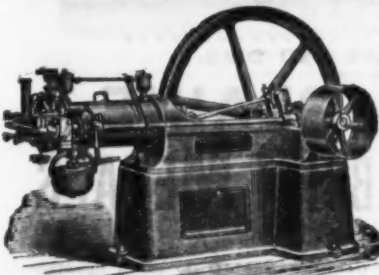
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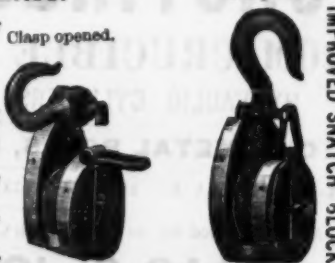
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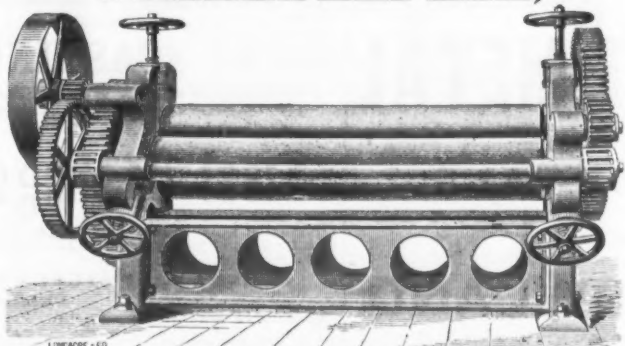
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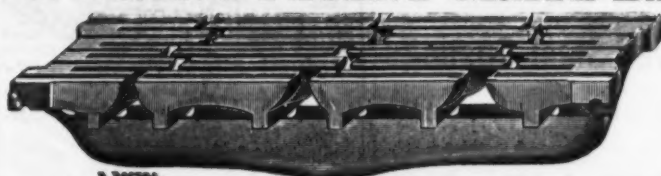
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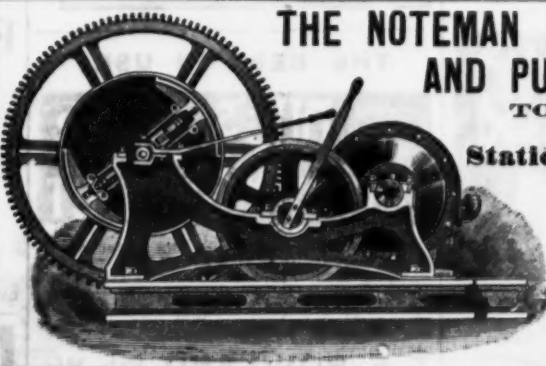
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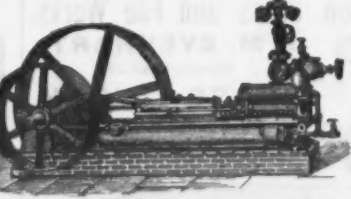
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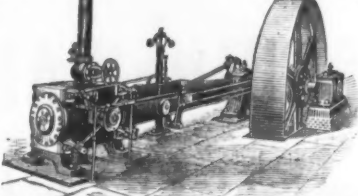


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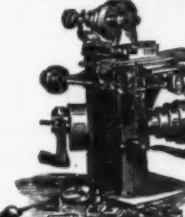
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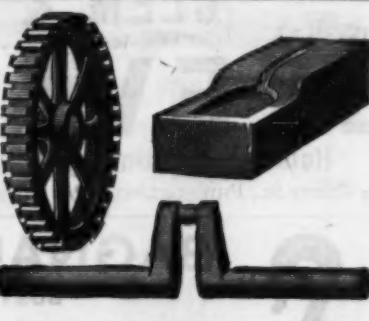
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